NEC

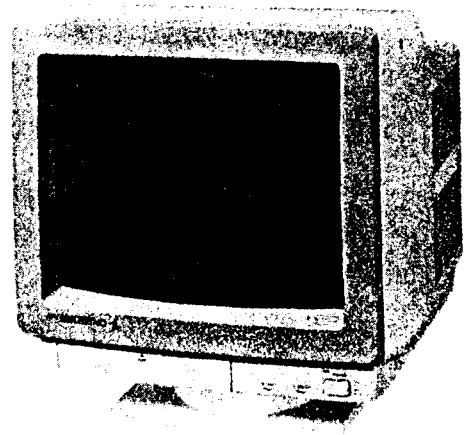
MODELS JC-1402HME/EE/ED/N/R

MULTISYNC COLOR MONITOR

SERVICE MANUAL

PART NO. 599910266

Better Service
Better Reputation
Better Profit



A. Electrical Description

SPECIFICATIONS

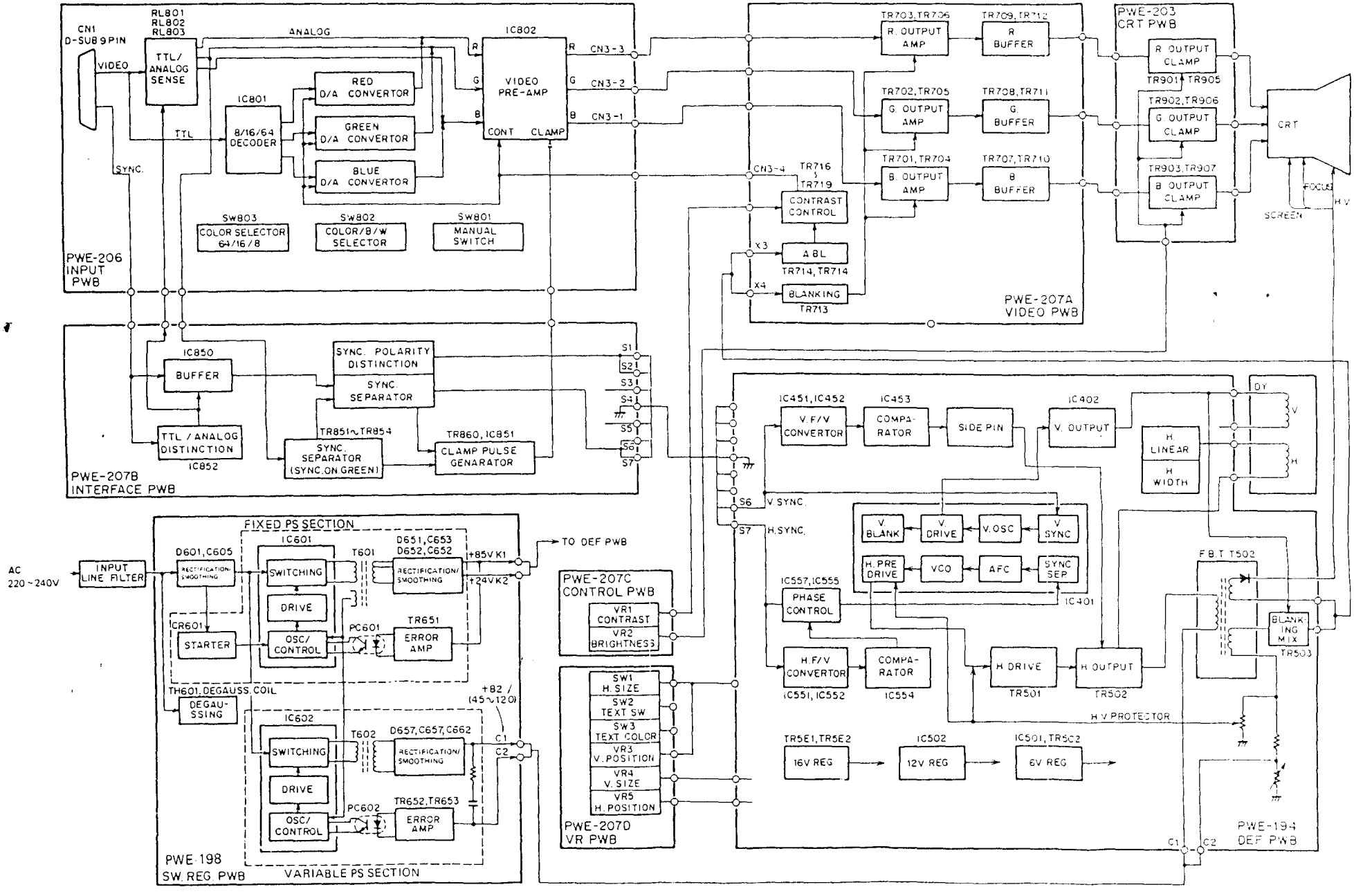
Picture Tube	13 Visual inches diagonal 90 degree deflection, 0.31 mm Trio dot pitch Dot type black matrix, Non-long persistence phosphor, Dark bulb, Direct each		
Input Signal	Video : TTL Level Positive ANALOG 0.7 Vp-p/75Ω Positive Sync. : Separate sync. TTL Level Horizontal sync. Positive/Negative Vertical sync. Positive/Negative : Composite sync. TTL Level Positive/Negative : Composite sync. on Green Video sync. 0.3 Vp-p Negative (Video 0.7 Vp-p Positive)		
Display Colors	TTL Input:	8/16/64 colors	
	Analog Input:	Unlimited colors	
Synchronization:	Horizontal:	15.5 kHz to 35 kHz (Automatically)	
	Vertical	50 Hz to 80 Hz (Automatically), Non-interlace	
Resolution	Horizontal:	800 dots	
	Vertical:	560 lines	
Video Band Width	30MHz		
Active Display Area	Horizontal:	250mm	(Active display area is changed by signal timing.)
	Vertical:	185mm	

Misconvergence	Less than 0.6mm		
Power Supply	AC220 ~ 240 V 50/60 Hz		
Power Consumption	85 W		
Environmental Considerations	Operating	Temperature	0°C to +40°C
		Humidity	30% to 80%
	Storage	Temperature	−20°C to +60°C
		Humidity	10% to 90%

NOTE: The above specification are subject to change without notice for further improvement.

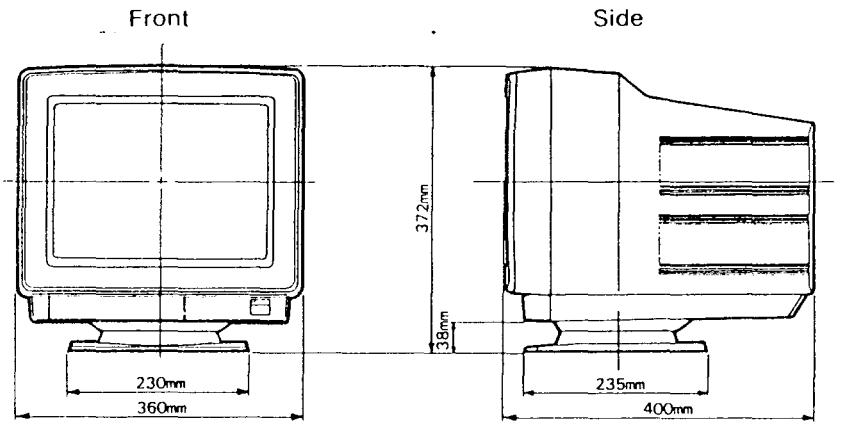
NEC Corporation
TOKYO, JAPAN

BLOCK DIAGRAM

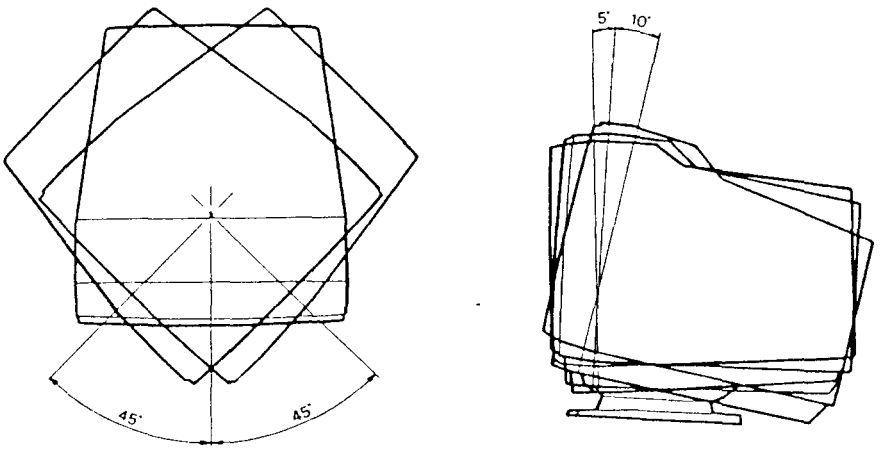


B. Mechanical Description (See below diagrams)

1. Cabinet: Molded plastic cabinet with attachable tilt swivel base.
2. Dimensions: 360(W)×372(H)×400(D) mm



3. Tilt Swivel Range



4. Weight: 16 kg

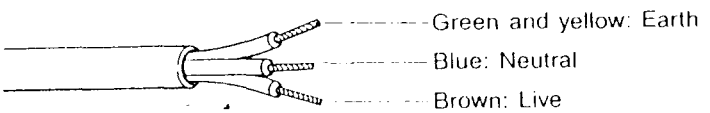
5. Controls

Rear Controls:
- MANUAL SWITCH
- MODE SWITCH
- COLOR MODE SWITCH

Front Controls:
- POWER SWITCH
- BRIGHTNESS CONTROL
- CONTRAST CONTROL
- V. POSITION CONTROL
- V. SIZE CONTROL
- H. POSITION CONTROL
- H. SIZE SWITCH
- TEXT SWITCH
- TEXT COLOR SWITCH

6. Input Signal Terminal: 9 PIN D-SUB CONNECTOR (FEMALE)
(SEE PAGE 2 FOR PIN ASSIGNMENTS)

7. Power cord
In case of JC-1402HMEE, the end of power cord is as follows.



GENERAL

MultiSync II, The Intelligent Monitor, from NEC, is a high resolution color monitor that automatically adjusts to graphics board scanning frequencies from 15.5kHz to 35kHz (Horizontal), 50Hz to 80Hz (Vertical). MultiSync II gives IBM PC, PC/XT, PC/AT, Personal System/2 (PS/2) and compatible computers users of crisp text and vivid color graphics displays when used with any of the IBM graphics adapters (the CGA, EGA, PGC, VGA or MCGA). MultiSync II can also be used with other IBM compatible graphics adapters to provide users with the widest range of color monitor compatibility and capability available in the market place.

FEATURES

- MultiSync II automatically scans all horizontal frequencies between 15.5kHz and 35kHz, and all vertical frequencies between 50Hz and 80Hz.
- MultiSync II is compatible with the IBM PC, PC/XT, PC/AT, PS/2 and look-alikes.
- MultiSync II is compatible with the IBM Color Graphics Adapter, the IBM Enhanced Graphics Adapter, the IBM Professional Graphics Controller, the IBM MultiColor Graphics Array, the IBM Video Graphics Array and other IBM compatible graphics adapters.
- MultiSync II's wide compatibility makes it possible to upgrade boards or software without purchasing a new monitor.
- MultiSync II has a maximum horizontal resolution of 800 dots and a maximum vertical resolution of 560 lines for superior clarity of display.
- MultiSync II offers both TTL and ANALOG signal inputs, and in the ANALOG mode can display an unlimited palette of colors depending on the graphics board and software being used. MultiSync II automatically adjusts to either a TTL signal input or an ANALOG signal input.
- MultiSync II features a TEXT SWITCH (TTL mode only) with a choice of three colors (paper white, amber and green) displaying word processing, spread sheets, databases or other software in crisp alphanumeric text on a black background.
- MultiSync II has a 14 inch diagonal display and a large, 13 inch viewing area.

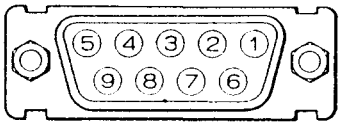
CAUTIONS

When setting up and using the MultiSync II pay special attention to these points.

- To eliminate eye fatigue, don't use the MultiSync II against a bright background or where the sun or other lights can directly shine on it.
- For optimum viewing, the MultiSync II should be just below eye level.
- Allow adequate ventilation all around the MultiSync II so that heat from the monitor can properly dissipate.
- Don't rest the MultiSync II or other heavy objects on the power cord. A damaged power cord can cause fires or electrical shocks.
- Keep the MultiSync II away from high capacity transformers, electric motors and other strong magnetic fields.
- Don't drop the MultiSync II when transporting it.
- Don't use the MultiSync II in damp, dusty, or dirty places.

PIN ASSIGNMENTS AND SIGNAL LEVELS

D—SUB Type 9-P



MANUAL SWITCH OFF

SIGNAL	TTL		ANALOG	
	CGA/EGA COMPATIBLE			
PIN NO.	16 COLORS	64 COLORS	PGC COMPATIBLE	VGA/MCGA COMPATIBLE
1	GROUND	GROUND	•RED	• RED
2	GROUND	SECONDARY RED	•GREEN	•GREEN
3	RED	PRIMARY RED	•BLUE	•BLUE
4	GREEN	PRIMARY GREEN	COMPOSITE SYNC.	H.SYNC.
5	BLUE	PRIMATY BLUE	ΔMODE CONTROL	V.SYNC.
6	INTENSITY	SECONDARY GREEN	RED GROUND	RED GROUND
7	NO—CONNECTION	SECONDARY BLUE	GREEN GROUND	GREN GROUND
8	H.SYNC.	H.SYNC.	BLUE GROUND	BLUE GROUND
9	V.SYNC.	V.SYNC.	GROUND	GROUND

MANUAL SWITCH ON

SIGNAL PIN No.	TTL				ANALOG		
	GRAY SCALE	8 COLORS	16 COLORS	64 COLORS	SEPARATE SYNC	COMPOSITE SYNC.	SYNC. ON GREEN
1	GROUND				•RED		
2	—			SECONDARY RED	•GREEN		* H/VSYNC. ON GREEN
3	—	RED		PRIMARY RED	•BLUE		
4	—	GREEN		PRIMARY GREEN	H.SYNC.	H/V SYNC.	—
5	—	BLUE		PRIMARY BLUE	V.SYNC	ΔMODE CONTROL	
6	INTENSITY	—	INTENSITY	SECONDARY GREEN	GROUND		
7	VIDEO	—		SECONDARY BLUE			
8	H.SYNC.						
9	V.SYNC.						

"—" means GROUND or NO—CONNECTION

"Δ" means mode control of vertical height

Normal vertical height at TTL high level or no-connection.

Approx. 20% increased vertical height at TTL low level or grounded.

SIGNAL LEVEL

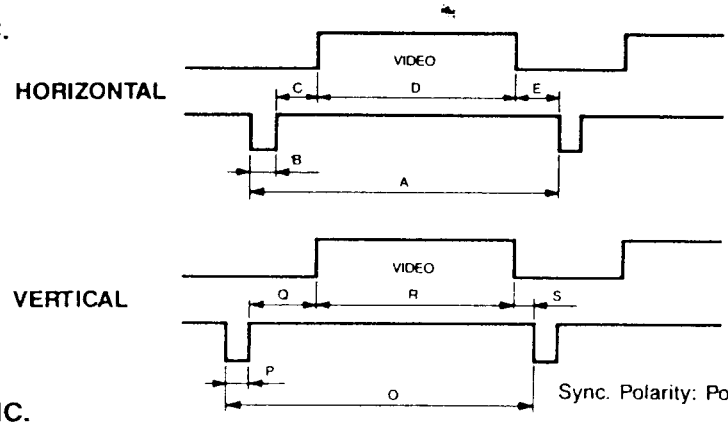
All signal levels, except for those listed below, are TTL

"•" means 0.7Vp-p (VIDEO)

"*" means 0.7Vp-p (VIDEO), 0.3Vp-p (SYNC.)

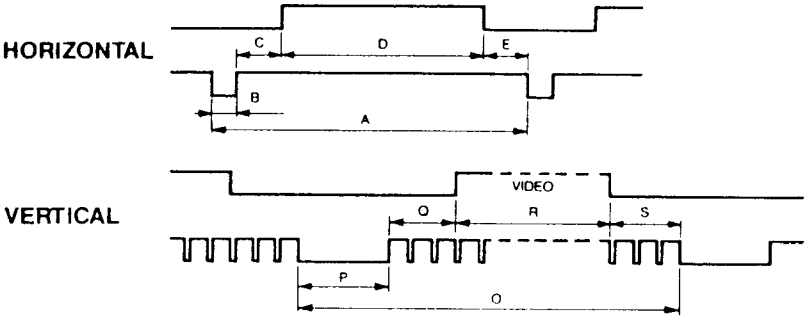
TIMING CHARTS

SEPARATE SYNC.



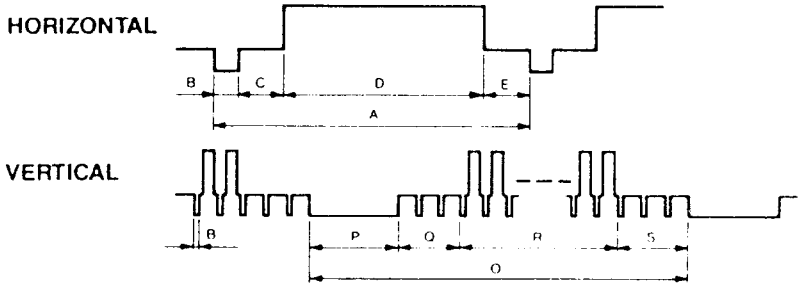
Sync. Polarity: Positive/Negative

COMPOSITE SYNC.



Sync. Polarity: Positive/Negative

COMPOSITE SYNC. & VIDEO (SYNC. ON GREEN)



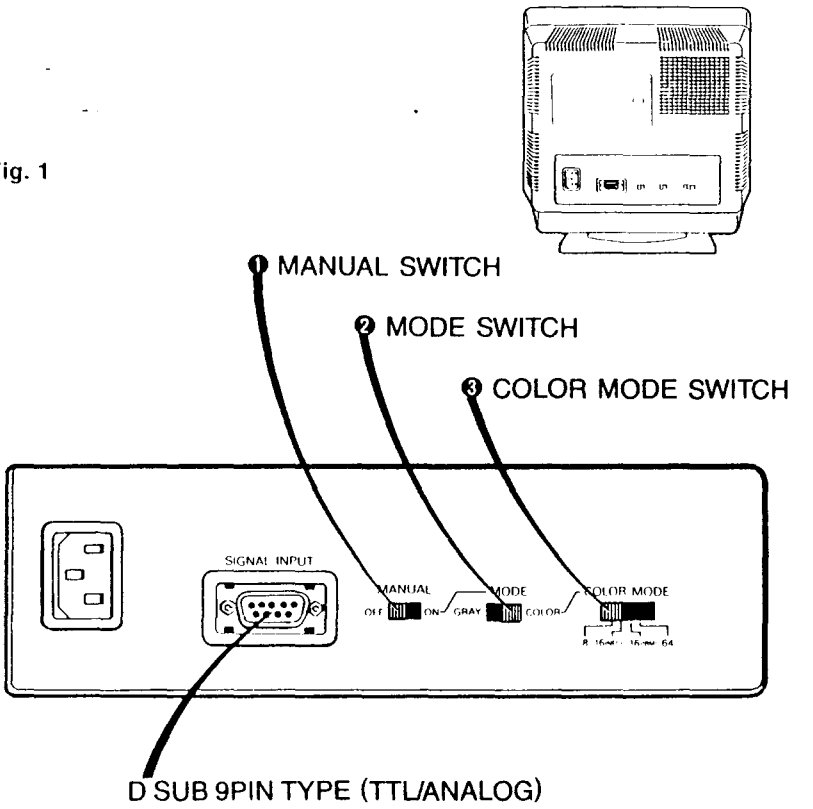
Sync. Polarity: Negative

PRESET TIMING

	CGA COMPATIBLE	EGA COMPATIBLE	PGC COMPATIBLE	VGA/MCGA COMPATIBLE		
fH	15.85kHz	22kHz	30.48kHz	31.5kHz		
A μs	63	45.5	33	31.77		
B μs	4.2	4.9	4.5	3.77		
C μs	7.2	1.6	2.8	1.89		
D μs	45	39	25.6	25.17		
E μs	6.6	0	0.1	0.94		
fv	61 Hz	60 Hz	60 Hz	70Hz		60Hz
O ms	16.4	16.68	16.6	14.27	14.27	16.68
P ms	00.75	0.6	0.07	0.064	0.064	0.064
Q ms	1.525	0.08	2.12	1.88	1.08	1.02
R ms	12.6	16	13.05	11.126	12.716	15.246
S ms	2.2	0	1.36	1.2	0.41	0.35
REMARKS	SEPARATE SYNC. H. SYNC. POSITIVE V.SYNC. POSITIVE	SEPARATE SYNC. H. SYNC. POSITIVE V. SYNC. NEGATIVE	H/V COMPOSITE SYNC.	SEPARATE SYNC. H. SYNC. POSITIVE V. SYNC. NEGATIVE	SEPARATE SYNC. H. SYNC. NEGATIVE V. SYNC. POSITIVE	SEPARATE SYNC. H.SYNC. NEGATIVE V. SYNC. NEGATIVE

ADJUSTING THE REAR CONTROLS

Fig. 1



❶ MANUAL SWITCH

This switch selects either the IBM mode when OFF or the manual mode when ON. When this switch is OFF, MultiSync II automatically works in the IBM mode and adjusts itself to the scanning frequency, resolution and color requirements of the IBM compatible graphics adapter being used.
When this switch is ON, the user must manually select the mode (gray/color) and the number of colors (8/16/64) needed by the graphics adapter being used with the MODE SWITCH and COLOR MODE SWITCH. (see No. ❷ ❸ below)

❷ MODE SWITCH

This switch selects either the gray scale or color with a TTL signal input. (See APPENDIX B pin assignment of gray scale.)
Refer to the user manual accompanying the graphics adapter for information on the input signal.

❸ COLOR MODE SWITCH

One of the four color configurations [8/16(NEC)/16(IBM)/64] must be selected when using non-IBM compatible graphics adapters. The proper configuration can be selected by using the COLOR MODE SWITCH as shown below.

COLOR MODE	COLOR MODE SWITCH
8 colors	8
16 colors with low intensity yellow	16 (NEC)
16 colors with IBM brown	16 (IBM)
64 colors	64

Note

This switch should be set correctly in relation to the input signal of the graphics adapter used.
Refer to the user manual accompanying the graphics adapter for information on the input signal.

ADJUSTING THE FRONT CONTROLS

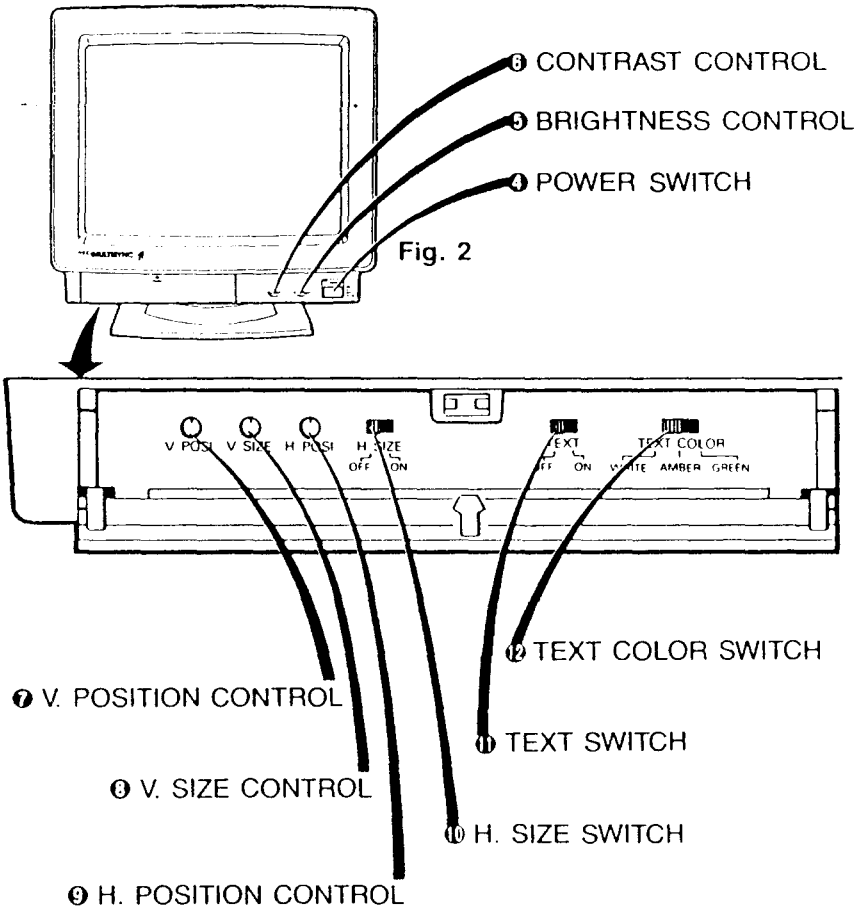


Fig. 2

❹ POWER SWITCH

Used to turn the Power ON or OFF.
When the power is ON, the power LED indicator is lit.

❺ BRIGHTNESS CONTROL

Used to adjust the picture brightness of the screen.

❻ CONTRAST CONTROL

Adjust the display to the contrast preferred by the user.

❼ V. POSITION CONTROL

Adjust this knob for the proper vertical position of the display. Turn the knob clockwise for a higher display position; turn it counterclockwise for a lower display position.

❽ V. SIZE CONTROL

Adjust this knob for the proper vertical size of the display. Turn the knob clockwise for a larger display; turn it counterclockwise for a smaller display.

❾ H. POSITION CONTROL

Adjust this knob for the proper horizontal position of the display. Turn the knob clockwise to reposition display to the right; turn it counterclockwise to reposition to the left.

⑩ H. SIZE SWITCH

Adjust this switch for the horizontal size of display preferred. When this switch is ON, the width of the display can be made wider.

⑪ TEXT SWITCH

This switch controls the text mode of the MultiSync II.
When it is ON, the text will appear in the color displayed by the TEXT COLOR SWITCH (see No.12 below), regardless of the colors of the software program being used.
When it is OFF, the color of the software program being used will be displayed.

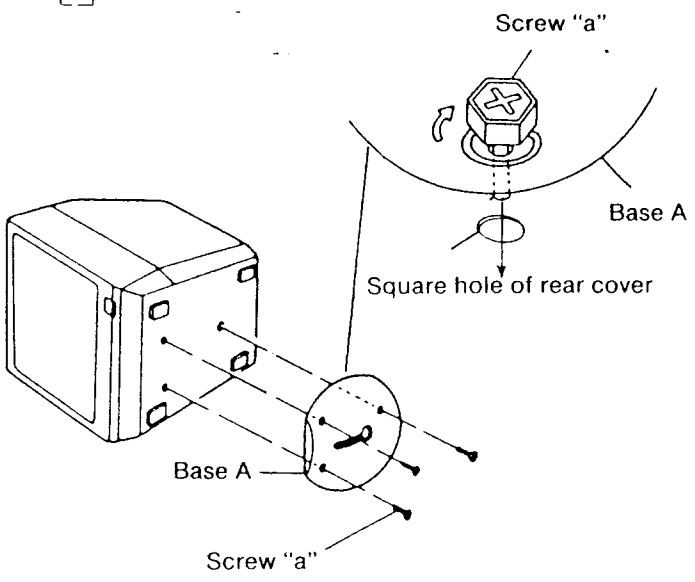
Note
The TEXT SWITCH works only in the TTL mode.

⑫ TEXT COLOR SWITCH

Use this switch to select the text color-green, amber or paper White-when the TEXT SWITCH is ON. Also use this switch to select the gray scale color-green, amber or paper white-when the gray scale mode is selected (see No.2) regardless of the position of the TEXT SWITCH.

THE METHOD FOR REMOVING AND MOUNTING THE TILT SWIVEL BASE

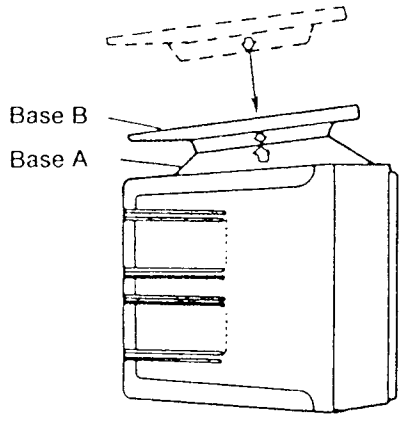
[1]



① Insert 3 mounting screws "a" into holes on the turning table A.

② Arrange the 3 male screws "a" into the female Screws on the bottom of the Set in correct.
Screw the table A to the set driving 3 screws "a" with a philips head screwdriver.

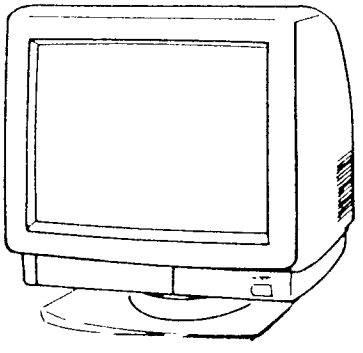
[2]



① Align the arrow of both tables A and B, and put the table B, into the table A as shown on the left.

② Both tables are fixed firmly by turning the table B 180° degrees clockwise.

[3]



After completing the attachment of the turning table in Sequence [1] → [2] , place the set in its proper position. It is recommended that the Set should be used with its face coming to the printing side on the turning table.

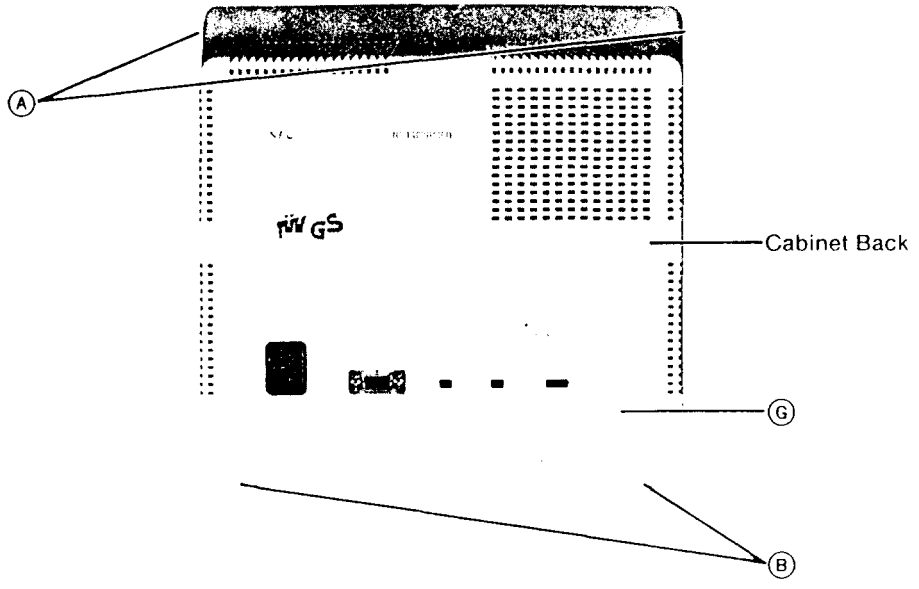
NOTE:
Please avoid a harsh handling to turn the Set vertically or horizontally.

[4] In case you remove the turning table, take a reverse Sequence from [2] → [1] .

DISASSEMBLY OF THESE MODELS

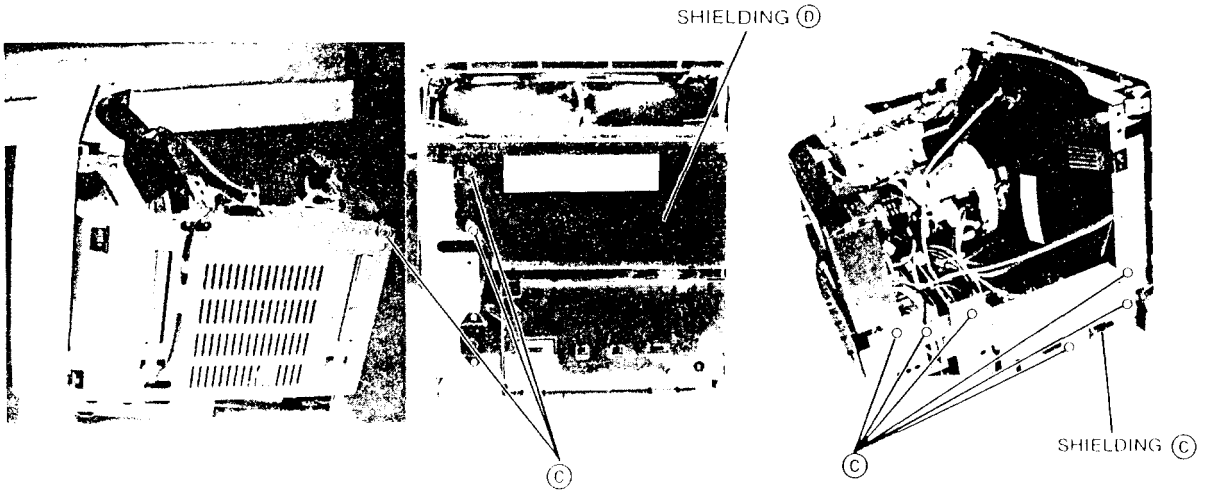
Warning; This equipment generates and used radio frequency energy and if not reconstructed properly, ie., in strict accordance with the following instruction, it may cause interference to radio or television reception.

1. Remove the two screws Ⓐ, the two screws Ⓑ and one screw Ⓖ pull the Cabinet Back bakcward to the rear.



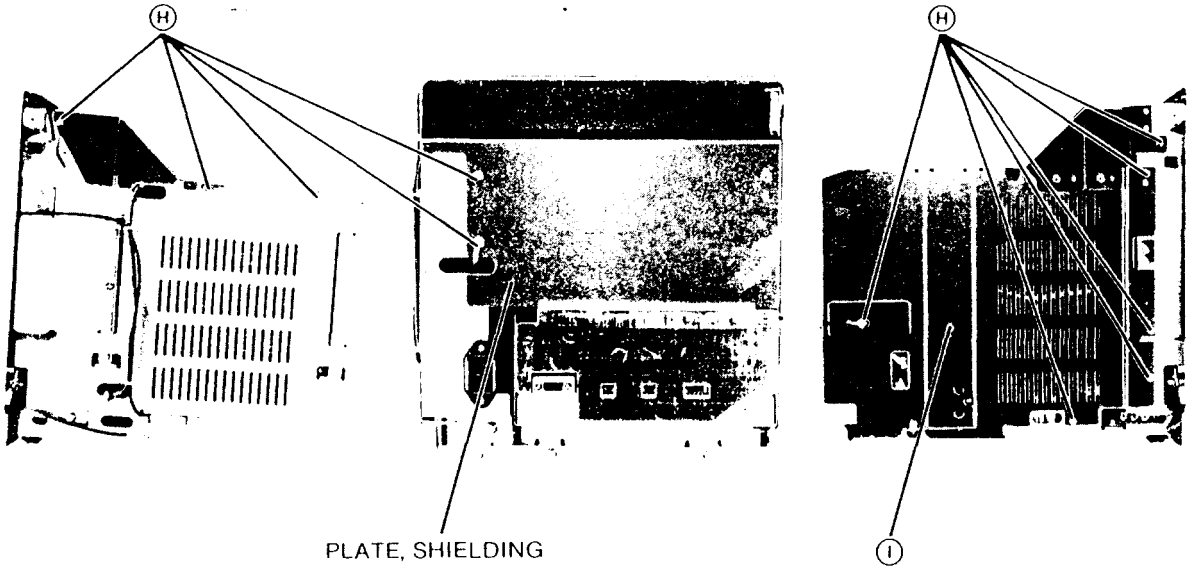
Note: To prevent the occurrence of a gap between the Cabinet Front and the Cabinet Back when attaching the Cabinet Back, be sure to tighten the screws in the order of Ⓐ to Ⓑ.

2. Remove the 9 screws Ⓒ, then take off SHIELDING Ⓒ and Ⓓ.



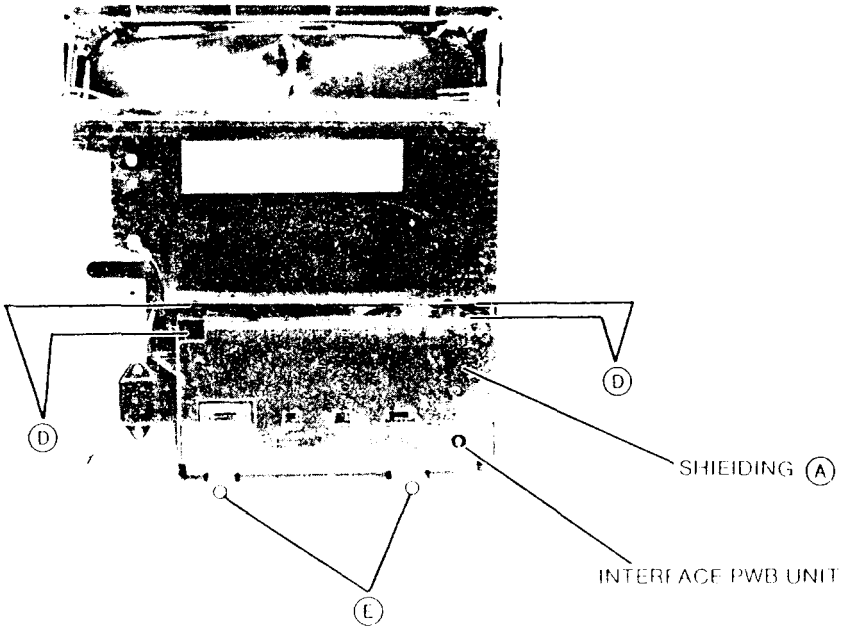
2' As for model JC-1402HMED

Remove the 11 screws Ⓗ1 and one screw Ⓘ, then take off PLATE, SHIELDING.



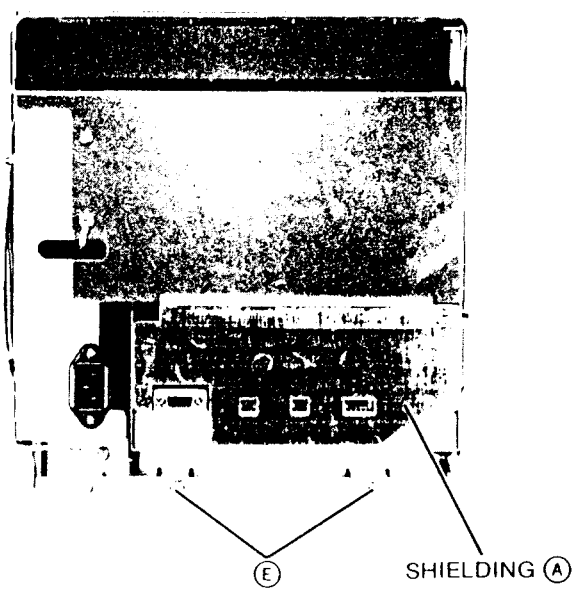
3. INTERFACE PWB UNIT DISASSEMBLY

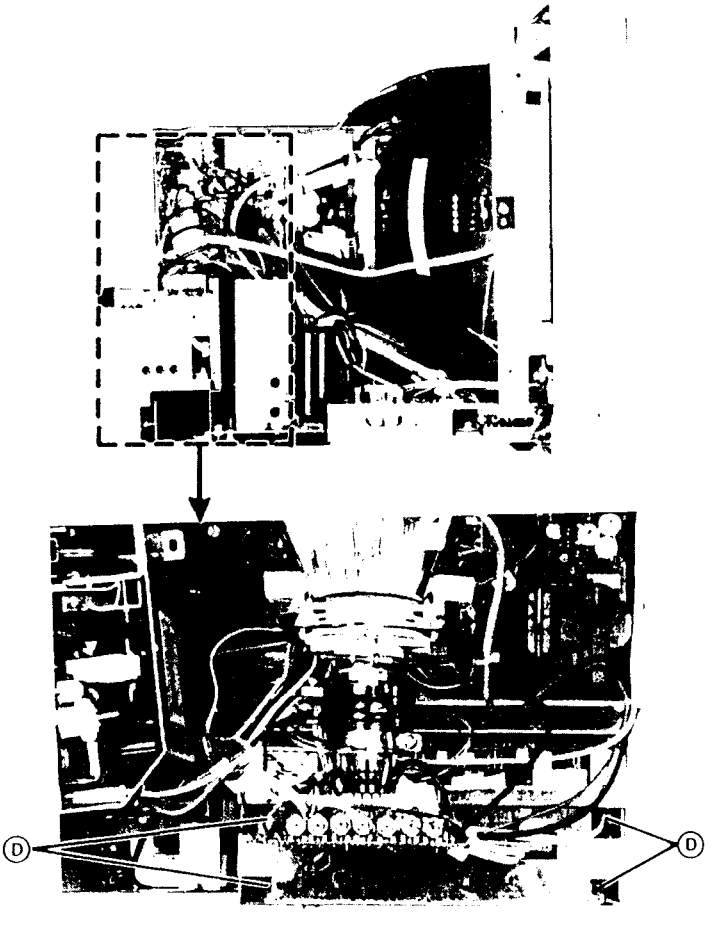
Remove the 4 screws Ⓓ, then take off the SHIELDING Ⓐ.
Disconnect the connectors from the INTERFACE PWB UNIT.
Remove the 2 screws, Ⓔ then take off the INTERFACE PWB UNIT.



3' As for model JC-1402HMED

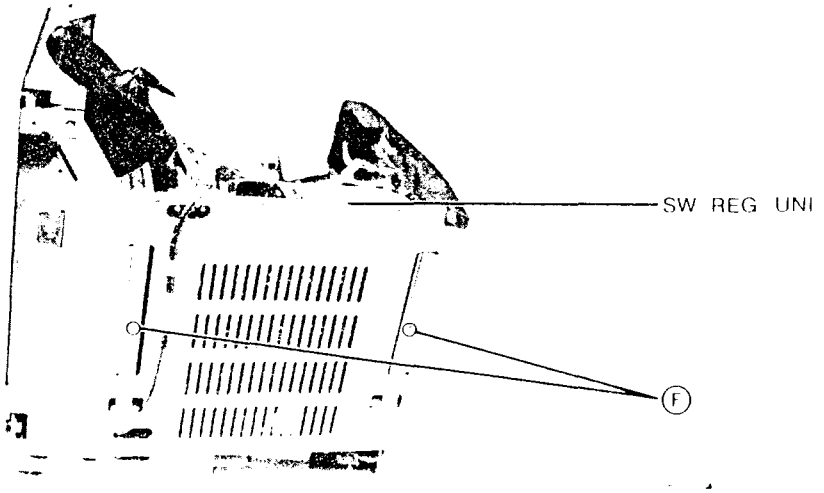
Remove PLATE, SHIELDING Ⓐ and then take out the INTERFACE PWB UNIT as the instructions bellow.
Remove the 4 screws Ⓓ, then take off the SHIELDING Ⓐ.
Disconnect the connectors from the INTERFACE PWB UNIT.
Remove the 2 screws, Ⓔ then take off the INTERFACE PWB UNIT.





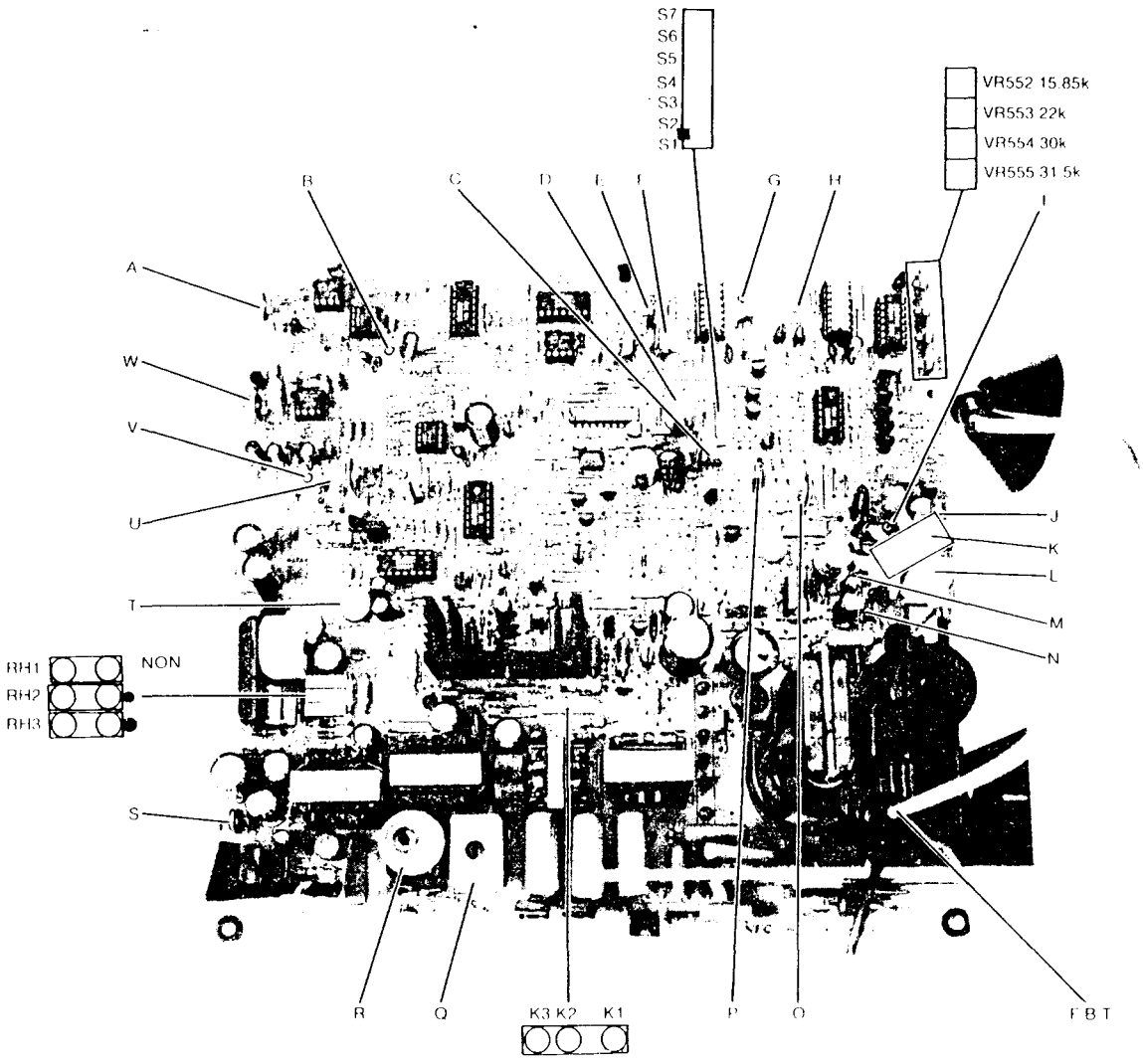
4. SW. REG. UNIT. DISASSEMBLY.

Disconnect the connectors C. K. SW and DEGAUSSING COIL from the SW. REG. UNIT.
Remove the 2 screws Ⓕ, then take off the SW. REG. UNIT.



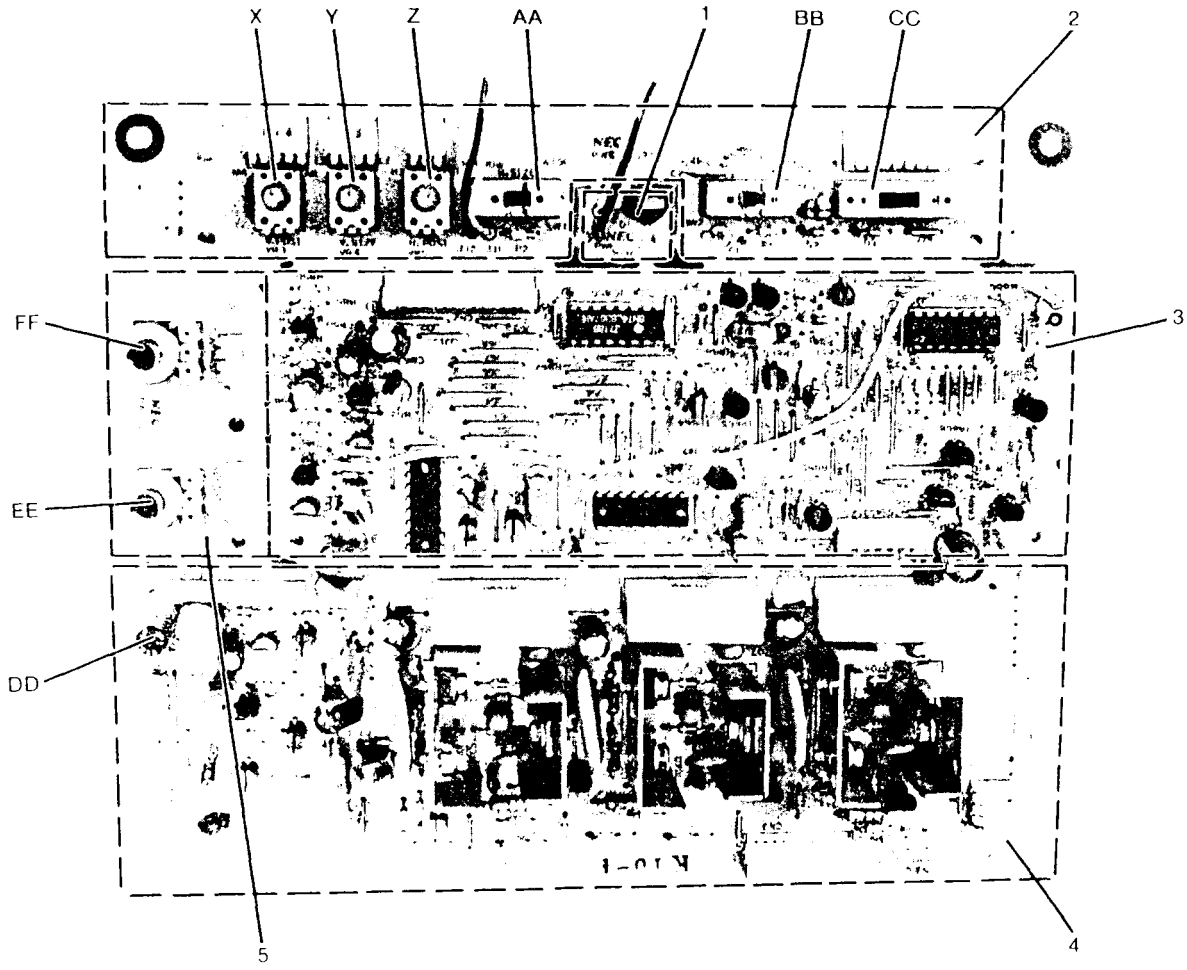
PARTS LOCATION DIAGRAMS

DEF PWB ASSY (PWE—194)



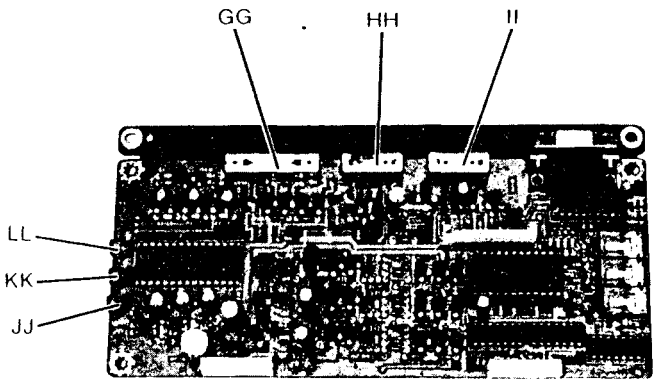
A	VR551 H. F-V ADJ	M	TP2002A
B	TP551 H. F-V	N	TP2001A
C	VR401 V.HOLD	O	VR402 SUB V. HEIGHT
D	TP501 H. HOLD	P	VR405 V. LIN
E	VR502 H. HOLD 2	Q	L506
F	VR501 H. HOLD 1	R	L505 H. WIDTH COIL
G	TP503 (GND)	S	VR5C1 TP502 6V ADJ.
H	TP5E1 (16V)	T	VR403 SIDE PIN
I	TP2001C	U	VR5E1 +16V
J	TP2002C	V	TP451 V.F-V
K	VR2001 VR2002 HV. PROTECTOR	W	VR451 V.F-V ADJ
L	VR2003 HV. ADJ.		

1	LED PWB ASSY	PWE-207E
2	VR PWB ASSY	PWE—207D
3	INTERFACE PWB ASSY	PWE—207B
4	VIDEO PWB ASSY	PWE-207A
5	CONTROL PWB ASSY	PWE—207C



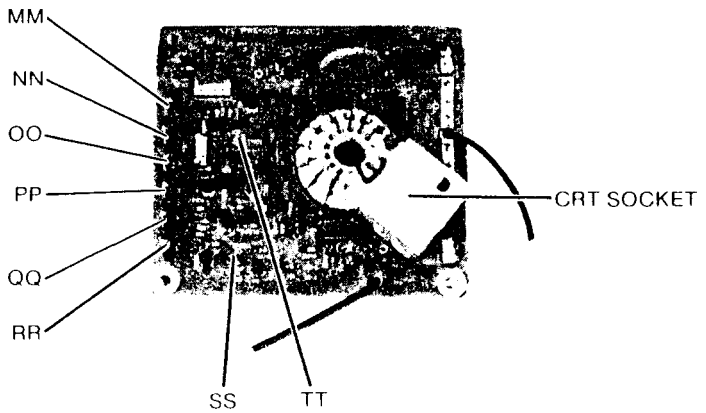
X	VR3 V. POSITION	CC	SW3 TEXT COLOR
Y	VR4 V. SIZE	DD	VR701 SUB. CONT
Z	VR5 H. POSITION	EE	VR2 BRIGHT
AA	SW1 H. SIZE	FF	VR1 CONTRAST
BB	SW2 TEXT		

INPUT PWB ASSY (PWE—206)



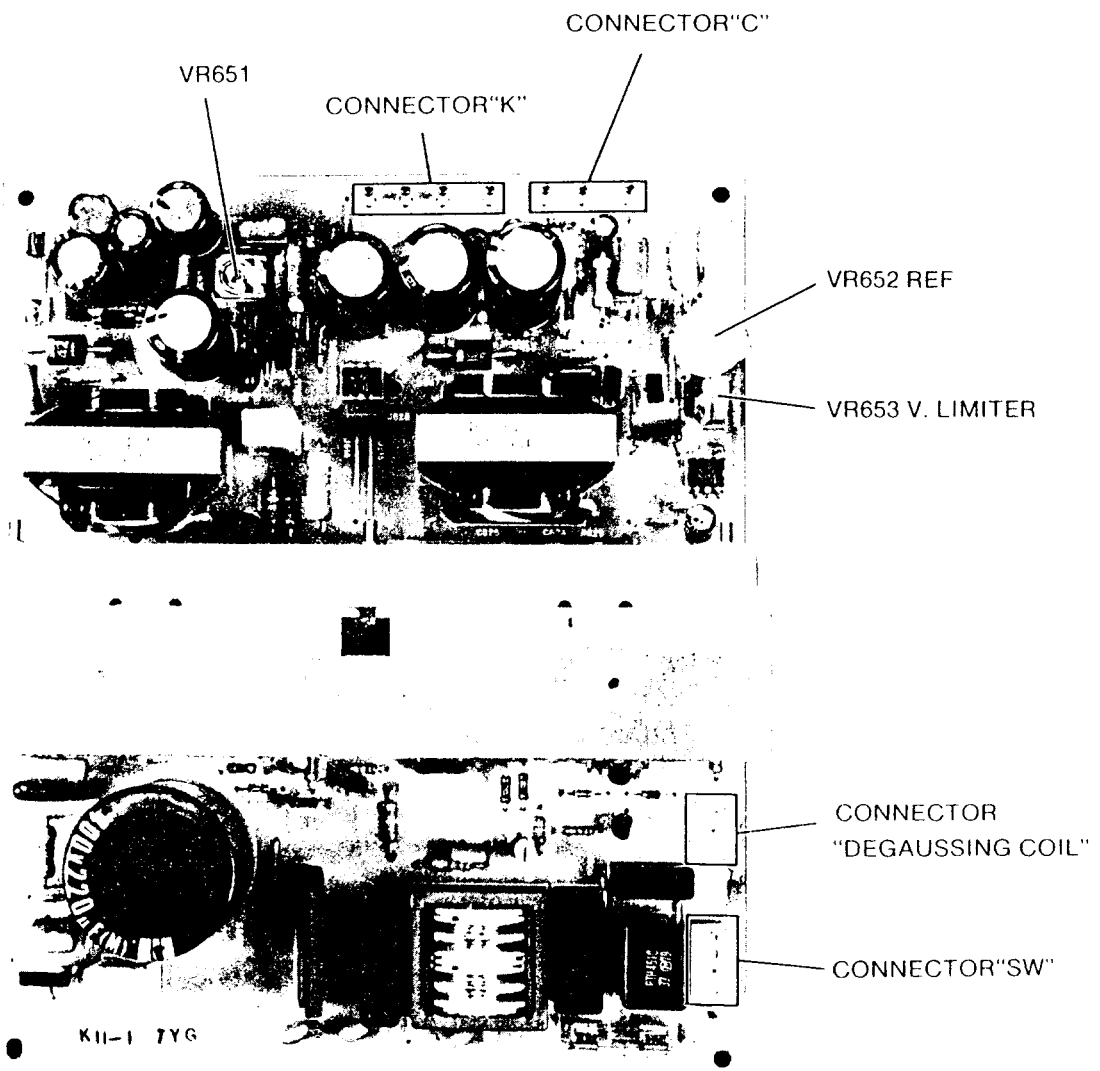
GG	SW803 COLOR MODE	JJ	VR803
HH	SW802 MODE	KK	VR802
II	SW801 MANUAL	LL	VR801

CRT PWB ASSY (PWE-203)



MM	VR904	QQ	VR902
NN	VR905	RR	VR903
OO	VR906	SS	TP901
PP	VR901	TT	TP902

SW. REG. PWB ASSY (PWE-198)



ADJUSTMENT PROCEDURE

Standard Adjustment Conditions

1) Power source voltage: AC220V~240V 50 Hz.
2) Aging: Adjust after leaving power on for 20 minutes or more.
3) Signals:
   Video: Analog 0.6Vp-p 75Ω terminal Positive polarity
   Analog Sync. on green
   Video: 0.6Vp-p
   Synchronizing: 0.3Vp-p
   Synchronizing: TTL level Negative polarity/positive polarity
   Separate/composite
   Deflection frequency: H. 15kHz - 35kHz
   V. 50 Hz - 80 Hz

   Unless otherwise specified, use signal 14 (22kHz EGA mode).

1. SW. REG. UNIT

1) $+B_1$ (VR651) +85V LINE
   Adjust VR651 to be 85 VDC
2) $+B_{LIM}$ (VR653) V.limit (C1-Gnd Voltage)
   Remove C-connector.
   Adjust VR653 to be 122 Volts.

Note: Do not operate the SW. Reg. unit itself without any load.

3) $+B_H$ (VR652) High Voltage control
   This control is permanently sealed at factory.
   Do not attempt to readjust.

2. Pre-adjustment of DEF PWB

Apply 24V DC between K2 and K3.
For sections 3) and 4), the JC-1402HMA INTERFACE PWB ASSY S connector output can also be used as a TESTING EQUIPMENT.

1) +16V adjustment
   Adjust VR5EI for 16V +0.05V DC between TP5E1 and the ground.
2) +6V adjustment
   Apply a resistance load of 10Ω10W between HC2 and HC3.
   Adjust VR5CI for 6 ±0.05V DC between TP502 and the ground.
3) Horizontal F/V convertor adjustment (signal 17)
   Input fH = 25kHz horizontal synchronizing negative polarity 5Vp-p between S7 and the ground.
   Adjust VR551 for 10 ±0.05V DC between TP551 and the ground.

4) Vertical F/V convertor adjustment (signal 17)
Input fv = 60Hz vertical synchronizing positive polarity 12Vp-p between S6 and the ground.
Adjust VR451 for 5.95 ±0.05V DC between TP451 and the ground.

5) High voltage protector setting
High voltage protector 1
With 32.0 ±0.1V DC applied between TP2001A and the ground,adjust VR2001 for 0.3 ±0.05V DC between TP2001C and the ground.
High voltage protector 2
With 31.8 ±0.1V DC applied between TP2002A and the ground, adjust VR2002 for 0.3 ±0.05V DC between TP2002C and the ground.
Due to DHHS,after adjusting VR2001 and VR2002 seal with an adhesive (TSE-385RTV)or cap (74007891).

3. Main Adjustment

Set the external VRs and switches as follows unless otherwise specified.
Front controls (as seen from front)

VR1 CONTRAST:	Max. (fully clockwise)
VR2 BRIGHTNESS:	At point where back luster disappears.
VR3 V.POSITION:	Mechanical center
VR4 V.SIZE:	Center click position
VR5 H.POSITION:	Center click position
SW1 H.SIZE:	Off (small)(left side)
SW2 TEXT:	Off (left side)
SM3 TEXT COLOR:	Paper white (left end)

Rear controls (as seen from rear)

SW801 MANUAL:	Off (left side)
SW802 MODE:	Color (right side)
SW803 COLOR MODE:	8 colors (left end)

3-1) DEF PWB Adjustment

(1) Horizontal Hold
a) Short TP501 and TP503 (GND).
b) Receive signal 16 (fH: 30kHz) and adjust horizontal hold (1) VR501 so that there is one screen.
c) Receive signal 18 (fH: 20kHz) and adjust horizontal hold (2) VR502 so that there is one screen.

(2) Vertical Hold
Receive signal 14 (fv: 60Hz), turn vertical hold VR401 and set to the mechanical center within the indented range.

(3) High Voltage Adjustment
Receive signal 16 (fH: 30.48kHz) and adjust high voltage adjustment VR2003 so that the high voltage is 23.5kV with the the CRT anode current cut off.
Due to DHHS,after adjusting seal with an adhesive (TSE—385RTV) or cap (74007891).

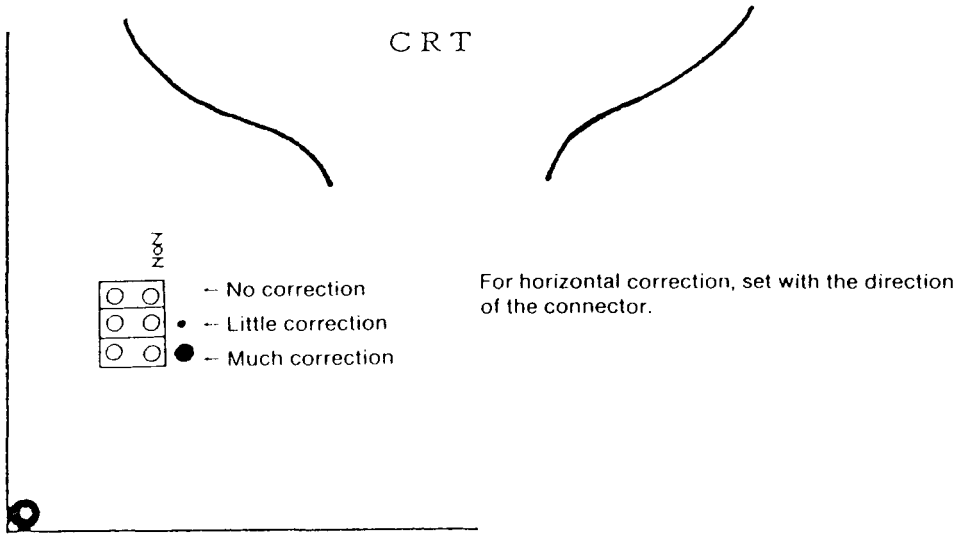
(4) Horizontal Raster Centering Signal 14 (Adjust at VGA H: 31.5kHz/V: 60Hz, 350 line mode)
Check that the horizontal linearity is suitable. If it is extremely bad, adjust to a suitable point with L506.

If the screen is rolling, centering can be adjusted with horizontal position VR5, but after return VR5 to the center click position.

Turn the brightness control fully clockwise so that back raster appears, then reinsert connector RH so that the back luster is in the center of the CRT screen.

Reinsert connector RH where there is no extreme lack of or break in the raster.

Set the luster centering with the manual switch off (to the left as seen from the back) and the horizontal size switch on (widened).



NOTE: Due to overscanning, signals of fH: 18kHz or lower cannot be set.

(5) Horizontal Position (Adjust to the raster center)

Input the signals below and adjust so to the center of the raster. The order is not important.

Signal			VR
CGA fH:	15.85kHz	TTL signal 10	VR552
EGA fH:	22 kHz	TTL signal 14	VR553
PGC fH:	30.48kHz	TTL signal 16	VR554
PS/2 fH:	31.5 kHz	TTL signal 1	VR555

NOTE: The TTL/analog setting should be correct.
The manual switch should be off.

(6) Vertical Linearity

a) Receive signal 12 (fH: 18kHz) and adjust VR402 for the suitable vertical screen size.

b) Adjust VR405 for the optimum vertical linearity.

(7) Vertical Sub Height

Receive EGA signal 14 (fH: 22kHz) and adjust VR402 for a vertical screen size of 180mm.

(8) Side Pin Cushion
djust VR403 for the optimum side pin cushion distortion.

(9) Horizontal Linearity
Adjust L506 for the optimum horizontal linearity.

(10) Horizontal Width
Receive EGA signal 14 (fH: 22kHz) and adjust width coil L505 for a horizontal screen size of 250 ±2mm.
The horizontal size switch should be off.
If correction is not sufficient with L505, turn the L506 linearity coil slightly and adjust within a range so that the linearity does not get worse.

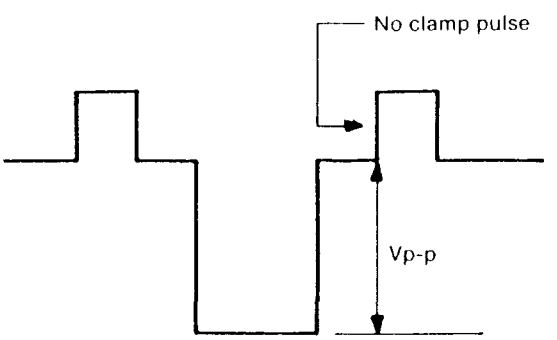
3-2) Adjustment of Video Amplitude and White Balance

NOTE: Check that the video signals are as shown below before performing the main adjustment. In particular, for LVG—1600, the video signal output level varies according to the signal patern, so check the level with the signal to be adjusted.
Video: Analog 0.6Vp-p
Synchronizing: Separate TTL level
Unless otherwise specified, use signal 10 for video adjustments.

(1) Initial Settings of Adjustment VRs

VR801 - 803	GAIN VR	Fully counterclockwise
VR701	SUB CONT VR	Fully clockwise
VR901 - 903	BIAS VR	Fully clockwise
VR904 - 906	SUB BRIGHT VR	Fully clockwise

(2) Video Contrast Adjustment (Signal 11: Window pattern)
a) GAIN VR adjustment
① Receive the window pattern (the video area of 1/3 - 1/2H x 1/2V in which there is no ABL even with contrast at maximum is preferable).
② Contrast control Fully clockwise
Brightness control Fully counterclockwise
③ Adjust VR801, VR802, and VR803 so that the R, G, and B outputs on the VIDEO PWB are 40Vp-p.
After adjusting, check the Vp-ps again and readjust if they do not conform to the settings.



b) SUB-CONT. VR adjustment

① Contrast control Fully counterclockwise
Brightness cosntrol Fully clockwise

② Adjust VR701 so that the G output on the video PWB is 10Vp-p.
After adjusting, check that the R and B outputs are 10Vp-p ±0.5Vp-p.
If not, fine-adjust VR701 so that the R, G, and B outputs are within the range of 10Vp-p ±0.5Vp-p.

(3) Cut-off Adjustment (All black signal)

Set the contrast control fully counterclockwise.

a) ① Short TP901 and TP902.

② Short TP401 and TP5E1 (16V) at 12kΩ.
(Be sure to perform step ① before step ②.)
As the screen VR is turned gradually clockwise, a single color will appear as a horizontal line.
Turn the bias VR for that color fully counterclockwise. Turn the screen VR further clockwise, and turn the bias VR for the next color to appear fully counterclockwise. Next turn the screen VR further clockwise and set the screen VR at the point where the third color is just slightly visible. This color is the reference color for the cut-off adjustment.

b) Turn the bias VRs for the colors other than the reference color clockwise for that they are about as bright as the reference color.

c) Undo the shorts between TP401 and TP5EI ② and between TP901 and TP902 ① in that order.

NOTE: Perform the cut-off adjustment in as dark a place as possible to make the white tracking which follows better.

(4) SUB—BRIGHT. VR Adjustment

a) Receive signal 10 (15.75kHz) H gray scale (16 gradations).

b) Contrast control Fully clockwise
Brightness control Fully counterclockwise

c) Adjust SUB BRIGHT. VR905 so that the 4/16 gradation is just slightly visible.
Do not touch VR905 after this.

d) Contrast control Fully counterclockwise
Brightness control Fully clockwise

e) Receive an all black signal.

f) Turn VR904 and VR906 so that the back raster is white.

Following procedure can be used instead of above. [Regarding quantum 801C]

(4)' Adjustment of sub-brightness VR

Turn the contrast control fully counter clockwise, the brightness control fully clockwise and sub-brightness control VR905 mechanical center.

a) Receive the signal 8 (15.75 kHz) all black signal.

b) Adjust VR904 and VR906 so that the background raster becomes white. If retrace lines appear, readjust the VR905 counter clockwise so that the retrace lines disappear, and readjust white balance.

c) Receive the all white pattern.

(5) Fine Adjustment of White Balance

Color temperature: Center X = 0.310

Y = 0.325

The color should be white with a slightly blue tinge.

a) Receive signal 11 (15.75kHz, pattern window) H gray scale (16 gradtions).
(Window pattern - within a range in which there is no ABL.)

b) Contrast control Fully counterclockwise
Brightness control Fully clockwise
Check that the white balance is proper for all gradations.
If not, fine adjust the sub bright VR, VR904 and VR906 to make it white.

NOTE: Do not move VR905: G. sub bright.

c) Set the contrast control fully clockwise and the brightness control so that there is no back raster.
Check that the white balance is proper for all gradations.
If not, fine adjust the gain VR, VR801 and VR803 to make it white.

NOTE: Do not move VR802: G. gain.

(6) Focus Adjustment

(100% white or 4-dot missing signal)
Contrast control Fully clockwise
Brightness control To sufficient brightness
Turn the focus control and adjust for the optimum focus.

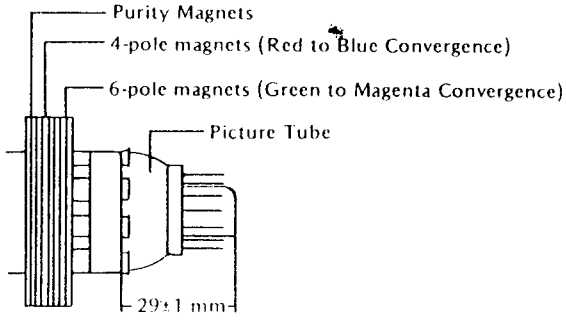
(7) Purity Adjustment

a) Be sure that the display is not being exposed to any external magnetic fields.

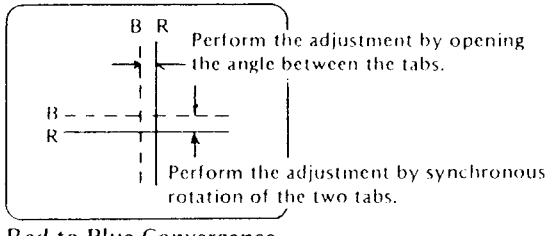
b) Ensure that the spacing between the Purity, Convergence Magnet, (PCM), assembly and the CRT stem is 29 mm ±1 mm. (See below diagram)

c) Produce a complete, red pattern on the display. Adjust the Purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180°.

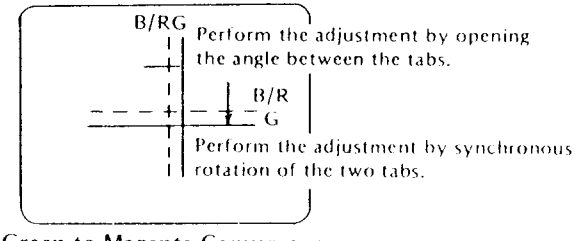
d) Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.



Purity, Convergence Magnet Assembly (PCM)



Red to Blue Convergence
(Magenta)



Green to Magenta Convergence
(White)

(8) Convergence Adjustment

a) Produce a magenta crosshatch on the display.

b) Adjust the focus for the best overall focus on the display.
Also adjust the brightness to the desired condition.

c) Vertical red and blue lines are converged by varying the angle between the two tabs of the 4-pole magnets on the PCM assembly. (See above diagrams)

d) Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.

e) Produce a white crosshatch pattern on the display.

f) Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.

g) Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

Indication address	Abbreviation	Unit	ROM address	BY LVG-1600								
				01	02	03	04	05	06	07	08	09
0	CLOCK	MHz	X00	28.320F	28.320F	28.320F	28.320F	28.320F	28.320F	28.320F	28.320F	14.160F
1	H FREQ	kHz	X03	31.470F	31.470F	31.470F	31.470F	31.470F	31.470F	31.470F	31.470F	31.470F
2	V FREQ	Hz	X06	50.032F	60.057F	70.089F	50.032F	60.057F	70.089F	50.032F	60.057F	60.057F
3	CHR-SIZE	DOT	X09	09X14	09X14	09X14	09X16	09X16	09X16	09X16	09X16	09X16
4	Nht	CHR	X0B	F100	F100	F100	F100	F100	F100	F100	F100	F050
5	Nhd	CHR	XOD	F080	F080	F080	F080	F080	F080	F080	F080	F042
6	Nhsp	CHR	XOF	F082	F082	F082	F082	F082	F082	F082	F082	F042
7	Vpw-Hpw	V.-RASTER H-CHR	X11	02X12	02X12	02X12	02X12	02X12	02X12	02X12	02X12	02X06
8	Nadj	RASTER	X13	13	07	01	05	13	01	05	13	12
9	Nvt	LINE	X14	F044	F037	F032	F039	F032	F028	F039	F032	F032
10	Nvd	LINE	X16	F025	F025	F025	F025	F025	F025	F030	F030	F031
11	Nvsp	RASTER	X18	F034	F030	F027	F031	F028	F025	F033	F030	F031
12	Nvspdj	RASTER	X1A	01	05	09	06	02	12	14	10	01
13	INT		X1B	00	00	00	00	00	00	00	00	00
14	OUT		X1C	F00011	F00011	F00011	F10011	F10011	F10011	F00011	F00011	F00011

DATA FORMAT FOR USING Quantum 801C

TIMING PARAMETERS:

Real Time Parameters

Dot Rate	MHz
Horizontal Rate	KHz
Vertical Rate	Hz

Non-Real Time Parameters

Horizontal	Vertical
Dots/Character	Lines/Character
Total	Total
Characters	Rows
Drive Delay	Drive Delay
Drive Width	Drive Width
	Step Width

Signal No.	Description
1.	H: 31.47KHz V: 50Hz (350 Lines)
2.	H: 31.47KHz V: 60Hz (350 Lines)
3.	H: 31.47KHz V: 70Hz (350 Lines)
4.	H: 31.47KHz V: 50Hz (400 Lines)
5.	H: 31.47KHz V: 60Hz (400 Lines)
6.	H: 31.47KHz V: 70Hz (400 Lines)
7.	H: 31.47KHz V: 50Hz (480 Lines)
8.	H: 31.47KHz V: 60Hz (480 Lines)
9.	H: 31.47KHz V: 60Hz (496 Lines)
10.	H: 15.85KHz
11.	H: 15.85KHz WINDOW PATTERN
12.	H: 18.43KHz
13.	H: 22KHz
14.	H: 22 KHz
15.	H: 30.48KHz (400 Lines)
16.	H: 30.48KHz (480 Lines)
17.	H: 25KHz
18.	H: 20KHz

OPTION PARAMETERS

Signal Gating

Composit Sync.	OP 1.—0=off 1=on
Vertical Step	OP 2.—0=off 1=on
Horizontal Drive	OP 3.—0=off 1=on
Vertical Drive	OP 4.—0=off 1=on

Signal Polarity

Composite Sync.	OP 5.—0=non-inverted 1=inverted
Vertical Step	OP 6.—0=non-inverted 1=inverted
Horizontal Drive	OP 7.—0=non-inverted 1=inverted
Vertical Drive	OP 8.—0=non-inverted 1=inverted
Video	OP 13.—0=non-inverted/positive 1=inverted/positive 2=non-inverted/negative 3=inverted/negative

Interlace Mode	OP 9.—0=non-interlace 1=interlaced sync only 3=interlaced sync & video
Video Mode	OP 10.—0=monochrome 1=color
Duty Cycle	OP 11.—0=50% 1=100%(OP 12.0) 0 or 1=100% (OP 12.2)
Character Clocking Mode	OP 12.—0=single-phase 2=dual-phase
Horizonatal Skew	OP14.—skew right 0-3 dots
Vertical Skew	OP 15.—skew down 0-9 lines
Cursor	OP 16.—0:off 1=fast blink 2=slow blink 3=on continuous

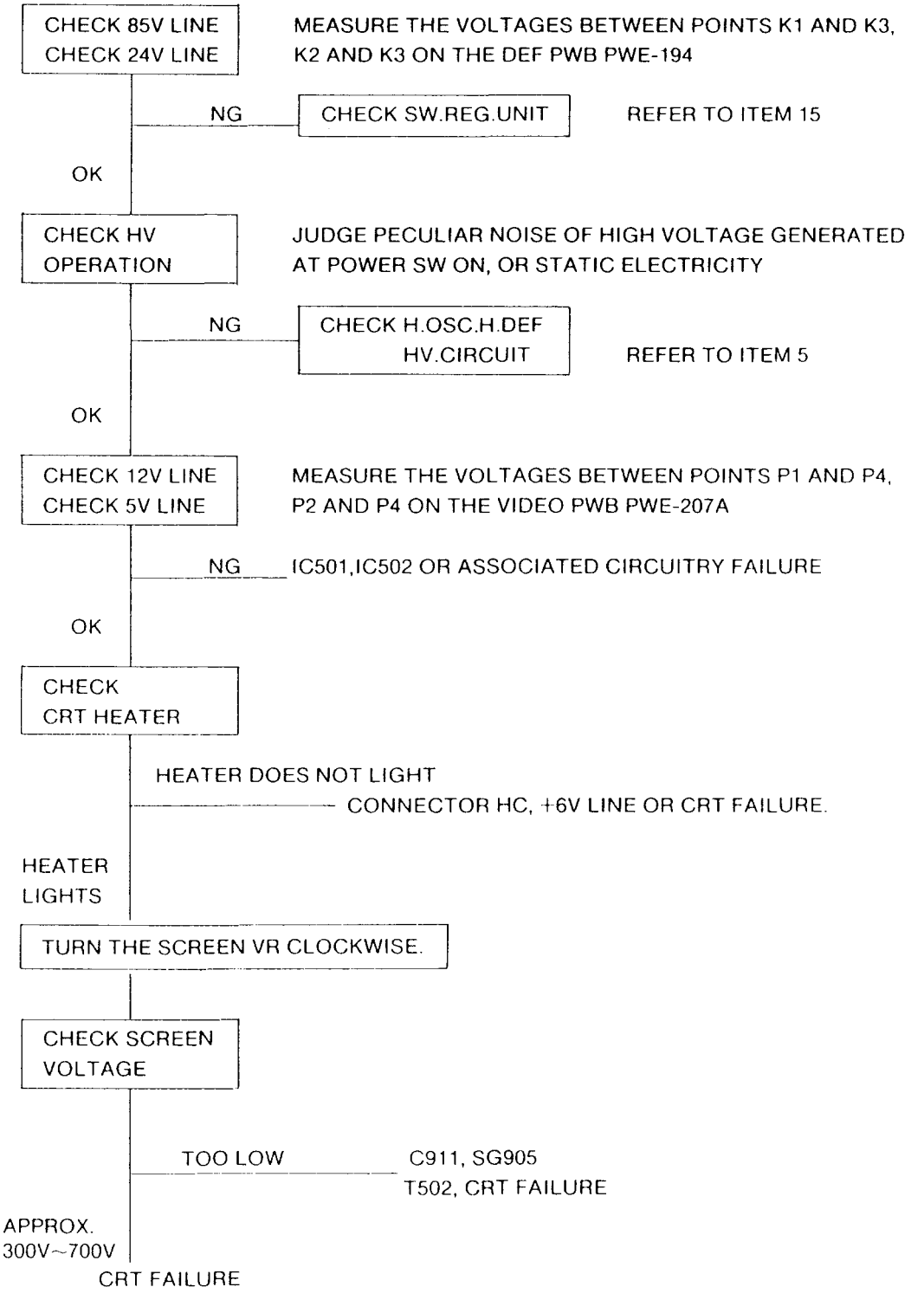
	10	11	12	14	15	16	17	18
Real Time Parameters								
Dot Rate(MHz)	14.200	14.200	16.255	16.370	25.110	25.110	20.800	16.640
Horizontal Rate(kHz)	15.850	15.850	18.432	22.003	30.473	30.473	25.000	20.000
Vertical Rate(Hz)	60.580	60.580	49.820	59.950	59.990	59.990	59.950	60.060
Non-Real Time Parameters.								
H: Dots/Character	8	8	9	8	8	8	8	8
Total	112	112	98	93	103	103	104	104
Characters	80	20	80	80	80	80	80	80
Drive Delay	92	62	81	80	80	80	88	88
Drive Width	7	7	15	10	14	14	8	8
V: Lines/Character	10	10	14	10	10	10	10	10
Total	260	260	370	366	508	508	417	333
Rows	20	10	25	35	40	48	38	30
Drive Delay	23	18	25	35	44	48	38	30
Drive Width	1	1	15	13	2	2	3	3
Step Width	—	—	—	—	—	—	—	—
Signal Gating								
Composite Sync.	1							
Vertical Step	0							
Horizontal Drive	1							
Vertical Drive	1							
Signal Polarity								
Compolsite Sync.	1							
Vertical Step	—	—	—	—	—	—	—	—
Horizontal Drive	0 P	0 P	0 P	0 P	1 N	1 N	1 N	1 N
Vertical Drive	0 P	0 P	1 N	1 N	1 N	1 N	1 N	1 N
Video	0							
Interlace Mode	0							
Video Mode	1							
Duty Cycle	0							
Character Clocking Mode	0							
Horizontal Skew	—	—	—	—	—	—	—	—
Vertical Skew	—	—	—	—	—	—	—	—
Cursor	—	—	—	—	—	—	—	—

	10	11	12	14	15	16	17	18
Real Time Parameters								
Dot Rate(MHz)	14.200	14.200	16.255	16.370	25.110	25.110	20.800	16.640
Horizontal Rate(kHz)	15.850	15.850	18.432	22.003	30.473	30.473	25.000	20.000
Vertical Rate(Hz)	60.580	60.580	49.820	59.950	59.990	59.990	59.950	60.060
Non-Real Time Parameters.								
H: Dots/Character	8	8	9	8	8	8	8	8
Total	112	112	98	93	103	103	104	104
Characters	80	20	80	80	80	80	80	80
Drive Delay	92	92	81	80	80	80	88	88
Drive Width	7	7	15	10	14	14	8	8
V: Lines/Character	10	10	14	10	10	10	10	10
Total	260	260	370	366	508	508	417	333
Rows	20	10	25	35	40	48	38	30
Drive Delay	23	18	25	35	44	48	38	30
Drive Width	1	1	15	13	2	2	3	3
Step Width	—	—	—	—	—	—	—	—
Signal Gating								
Composite Sync.	1	1	1	1	1	1	1	1
Vertical Step	0	0	0	0	0	0	0	0
Horizontal Drive	1	1	1	1	1	1	1	1
Vertical Drive	1	1	1	1	1	1	1	1
Signal Polarity								
Compolsite Sync.	1	1	1	1	1	1	1	1
Vertical Step	—	—	—	—	—	—	—	—
Horizontal Drive	0 P	0 P	0 P	0 P	1 N	1 N	1 N	1 N
Vertical Drive	0 P	0 P	1 N	1 N	1 N	1 N	1 N	1 N
Video	0	0	0	0	0	0	0	0
Interlace Mode	0	0	0	0	0	0	0	0
Video Mode	1	1	1	1	1	1	1	1
Duty Cycle	0	0	0	0	0	0	0	0
Character Clocking Mode	0	0	0	0	0	0	0	0
Horizontal Skew	—	—	—	—	—	—	—	—
Vertical Skew	—	—	—	—	—	—	—	—
Cursor	—	—	—	—	—	—	—	—

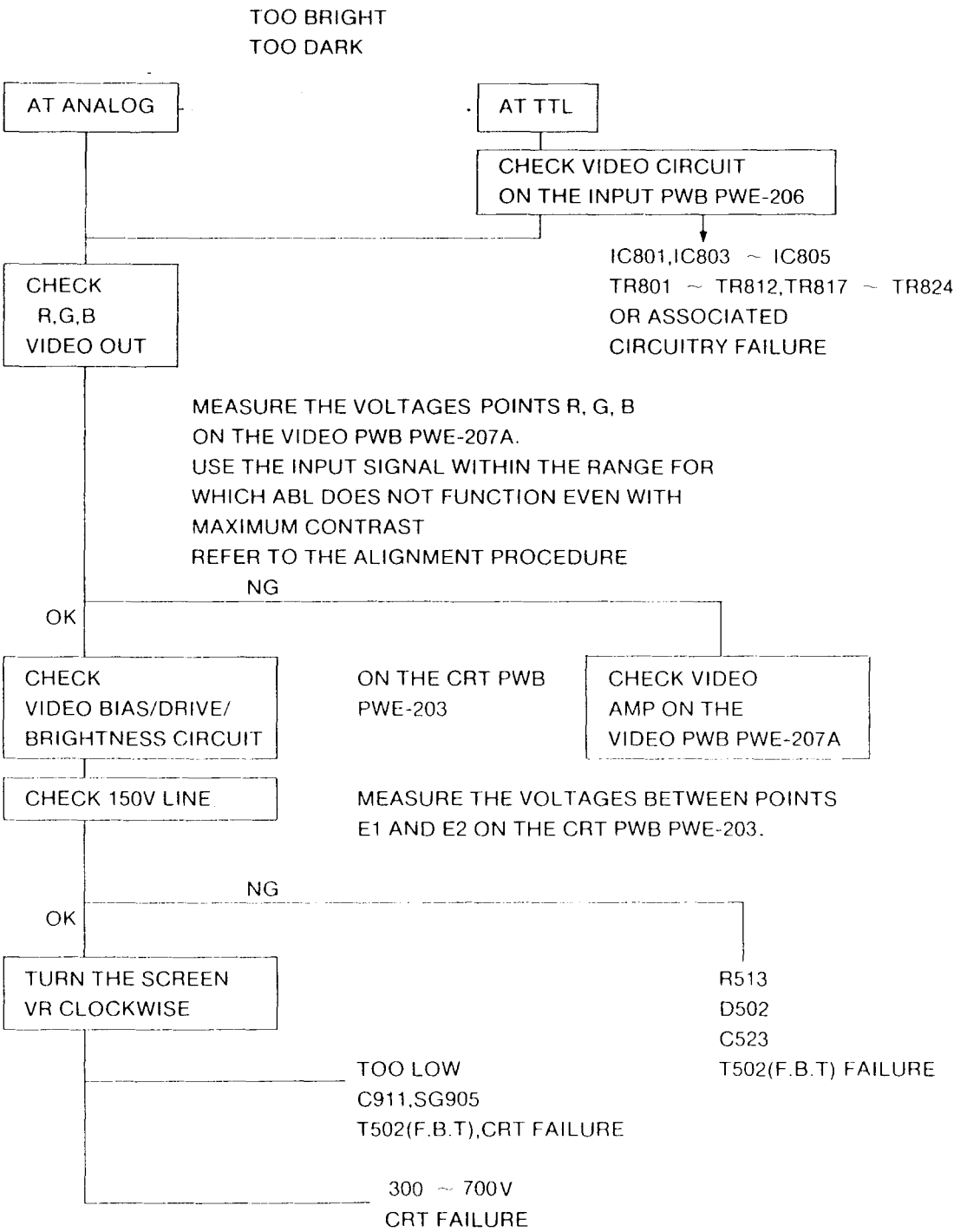
TROUBLE SHOOTING

BEFORE USING THIS CHART, PLEASE REFER TO THE TROUBLE SHOOTING THE USER'S MANUAL.

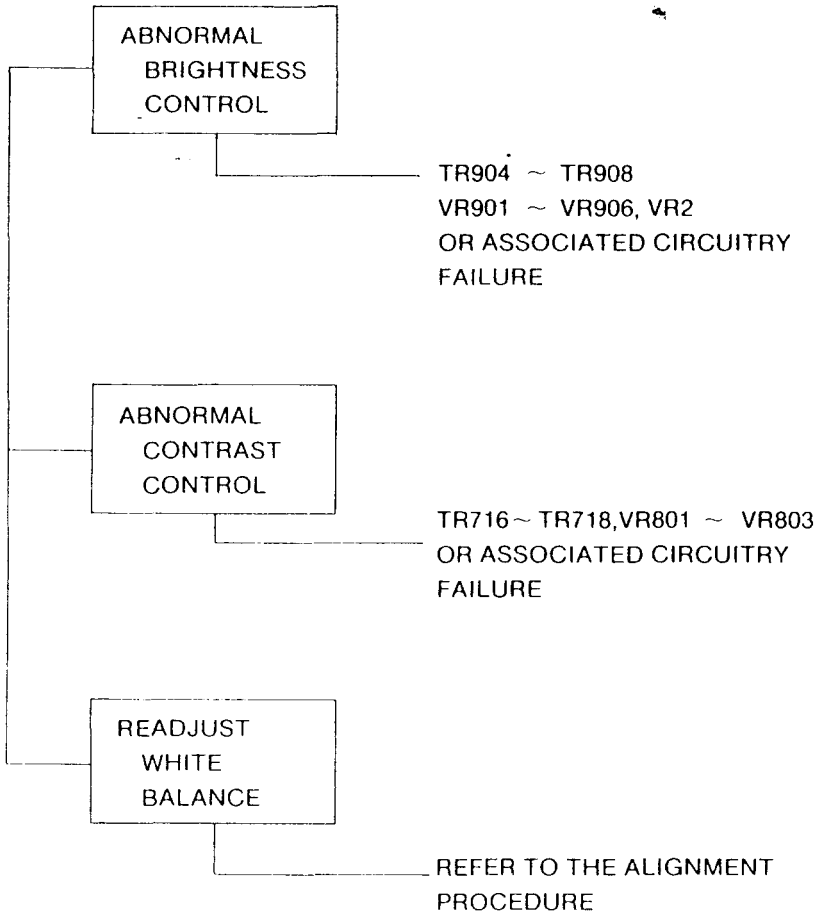
1. NO RASTER



2. ABNORMAL VIDEO ON CRT SCREEN

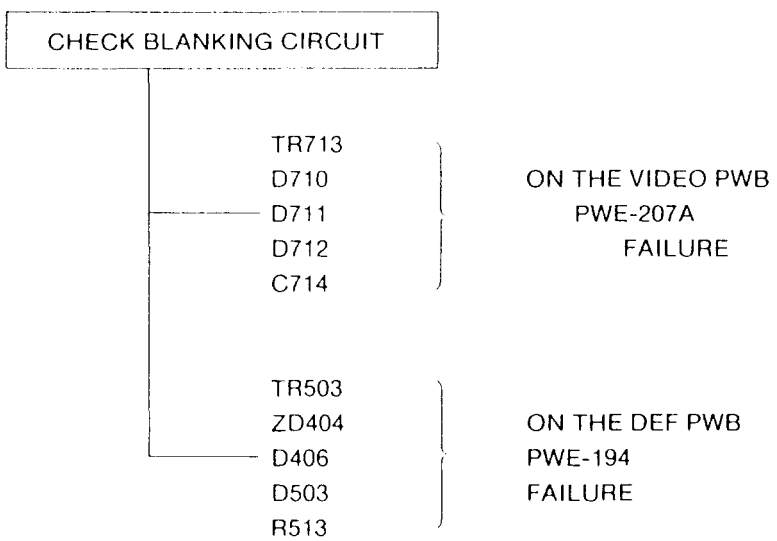


3. ABNORMAL WHITE BALANCE AND TRACKING



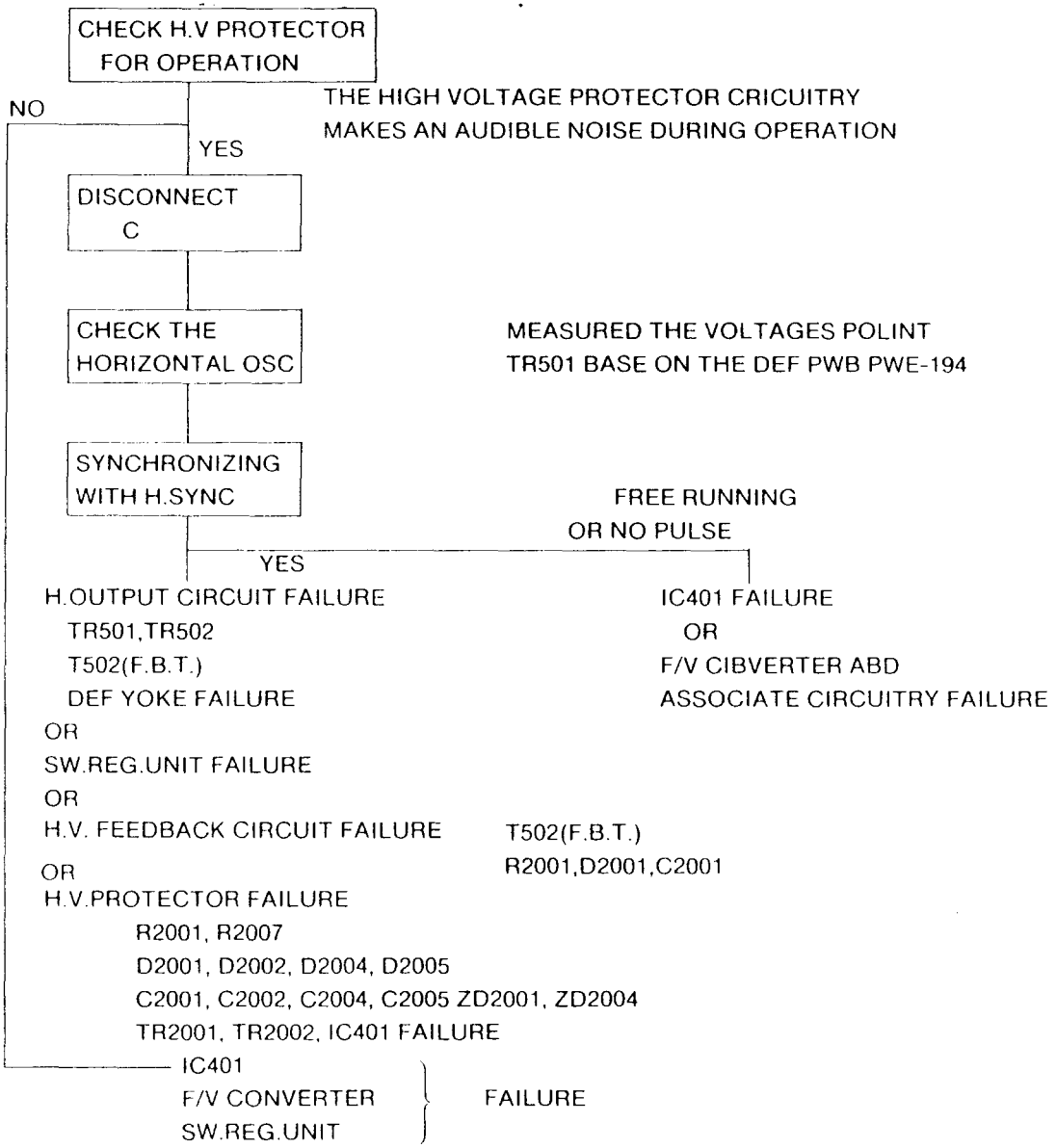
4. NO BLANKING WORKS

VISIBLE RETRACE LINE ON THE BACK RASTER



5. H.OSC/DEF/HV.CIRCUIT FAULT

NO RASTER
ABNORMAL PICTURE SIZE
ABNORMAL VIDEO ON THE CRT SCREEN



6.A H-F/V CONVERTER AND ASSOCIATED CIRCUITRY

CHECK H.SYNC
ON THE DEF PWB
PWE-194
POINT S7

NG → CHECK SYNC, CIRCUIT ON THE INTERFACE PWB PWE-207B

OK

CHECK TP5E1 AND TP551 VOLTAGE

MEASURE THE VOLTAGES
ON THE DEF PWB PWE-194.
SIGNAL CONDITION: SEE ALIGNMENT PROCEDURE

TP5E1=16V
TP551=10V AT 25kHz HORIZONTAL FREQUENCY

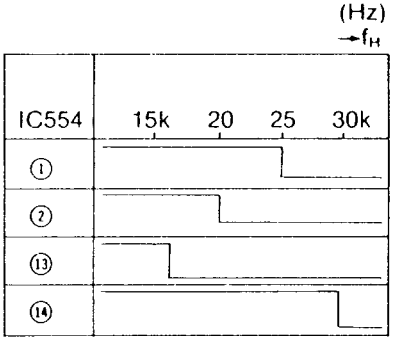
NG → READJUST

OK

OK ← NG → IC551
IC552 FAILURE

CHECK THE IC554 OUTPUT

MEASURE THE VOLTAGES ON THE DEF PWB PWE-194



IC554	15.85 kHz CGA	22 kHz EGA	30.48 kHz PGC	31.5 kHz VGA
①	H	H	L	L
②	H	L	L	L
⑬	H	L	L	L
⑭	H	H	L	L

NG

IC557
IC555 FAILURE

IC554 FAILURE

6.B V-F/V CONVERTER AND ASSOCIATED CIRCUITRY

CHECK V.SYNC.
ON THE DEF PWB
PWE-194
POINT S6

NG → CHECK SYNC. CIRCUIT ON THE INTERFACE PWB PWE-207B

OK

CHECK TP5E1
AND TP451
VOLTAGE

MEASURE THE VOLTAGES
ON THE DEF PWB PWE-194.
SIGNAL CONDITION: SEE ALIGNMENT PROCEDURE

TP5E1=16V
TP451=5.95V AT 60Hz VERTICLA FREQUENCY

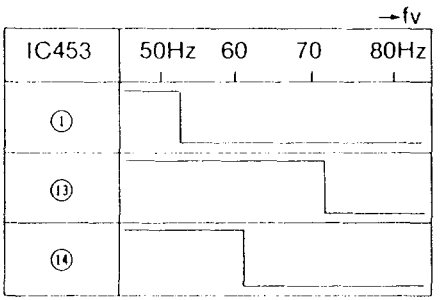
NG

OK → READJUST

OK → NG → IC451
IC452 FAILURE

CHECK THE
IC453 OUTPUT

MEASURE THE VOLTAGES ON THE DEF PWB PWE-194



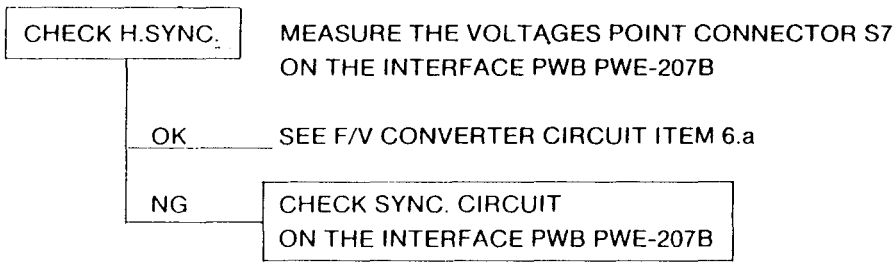
NG

IC456 FAILURE

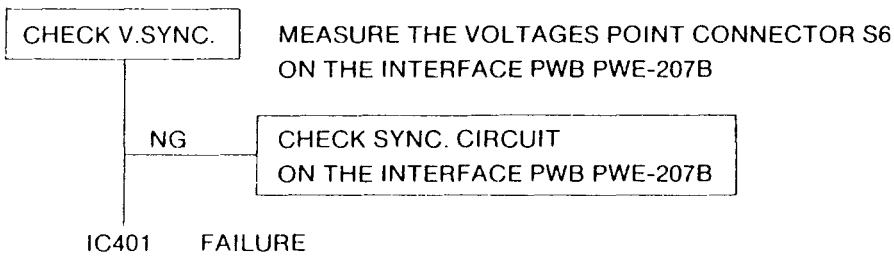
IC452
IC453 FAILURE

7. LACK OF STABLE SYNCHRONIZATION

- HORIZONTAL

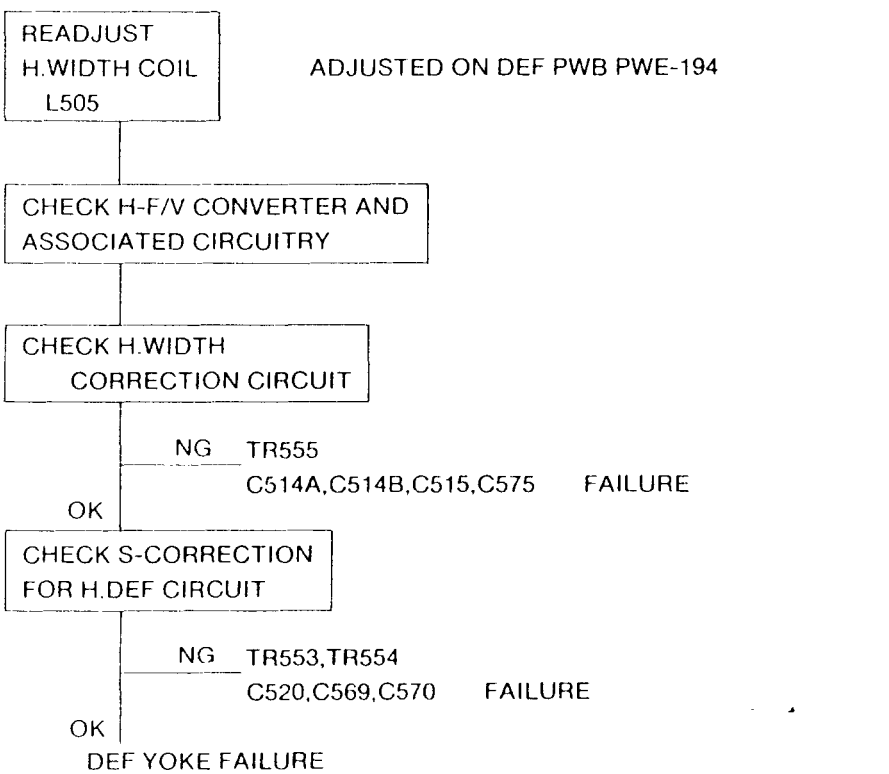


- VERTICAL



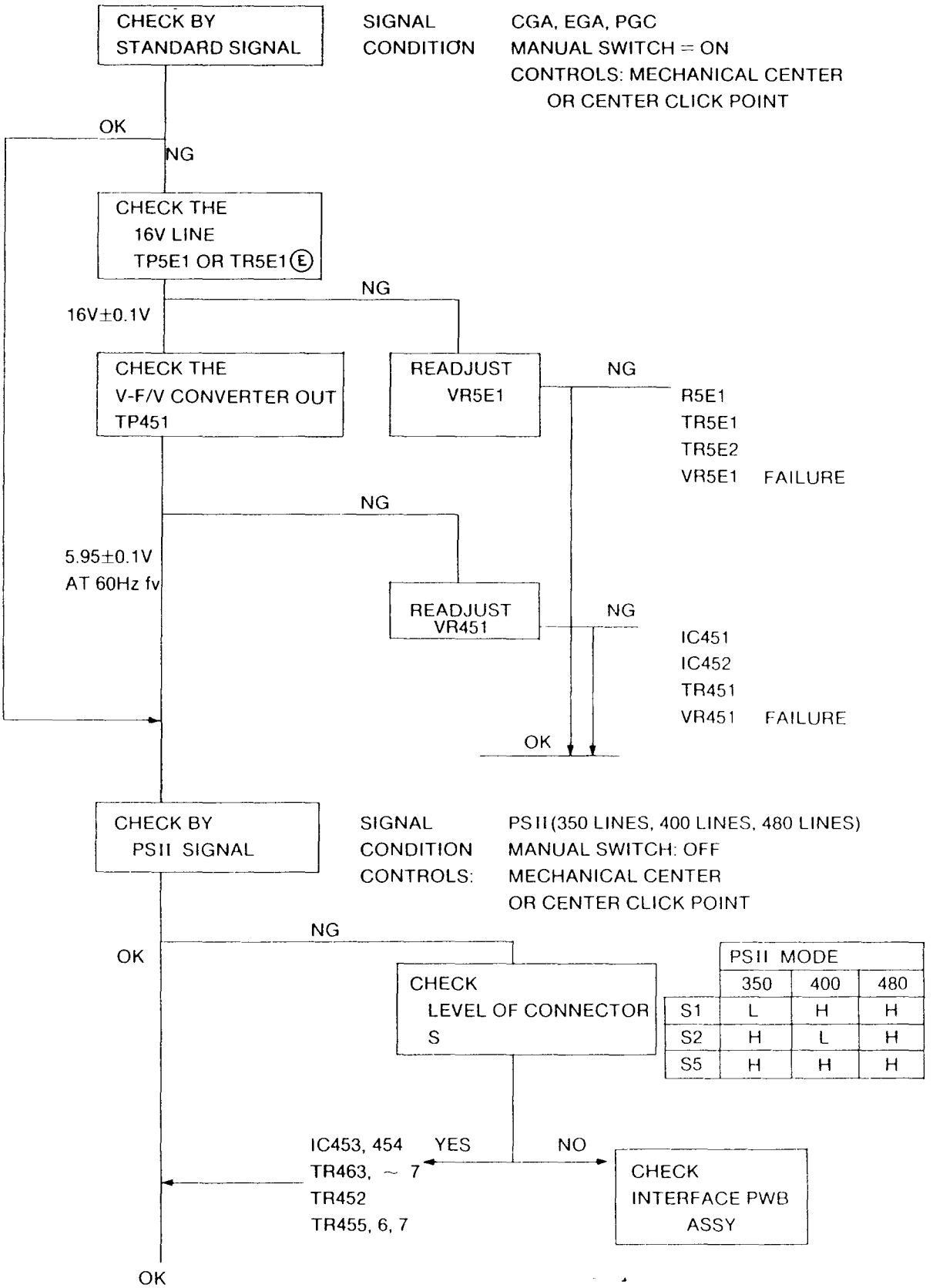
8. PICTURE SIZE

ABNORMAL HORIZONTAL WIDTH



ABNORMAL VERTICAL HEIGHT

TOO LARGE OR SMALL PICTURE SIZE



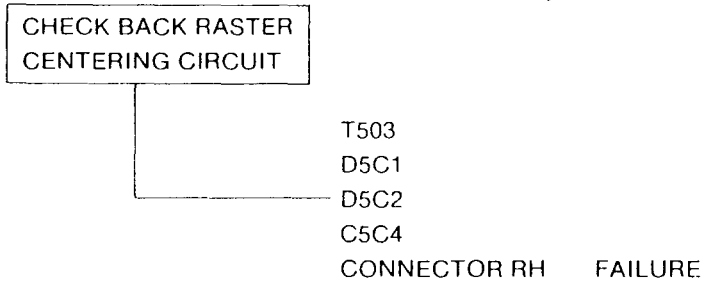
	PSII MODE		
	350	400	480
S1	L	H	H
S2	H	L	H
S5	H	H	H

1)	NO CHANGE WITH V.SIZE CONTROL	LOOSE CONNECTOR L
2)	UNDERSCANNING OF RASTER WITH CGA	TR453, TR459 IC551 IC552 IC554 16V LINE CIRCUIT FAILURE
3)	SMALL AT PGC 400 LINES MODE	TR454 TR462 FAILURE

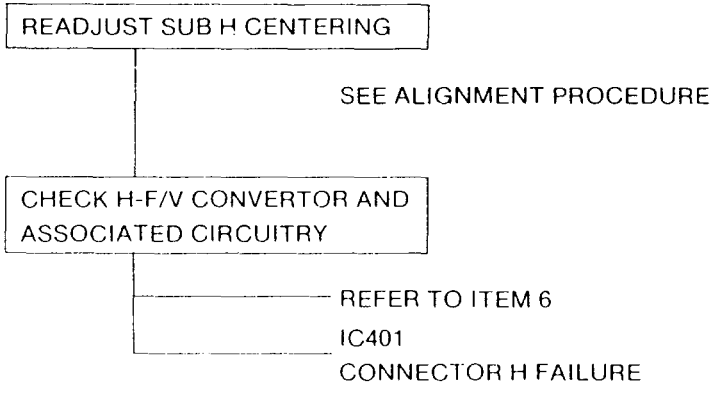
9. CENTERING

9.1. HORIZONTAL

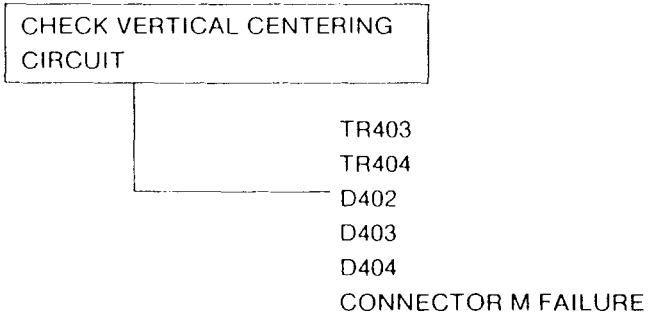
a) BACK RASTER CENTERING



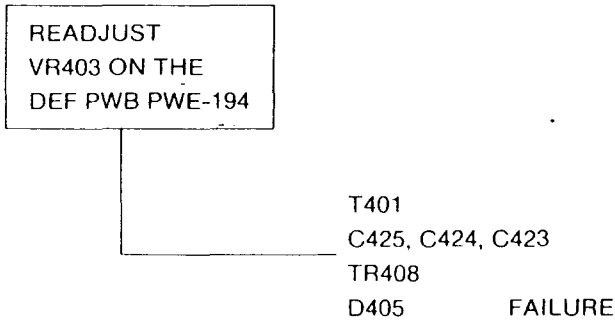
b) PICTURE CENTERING



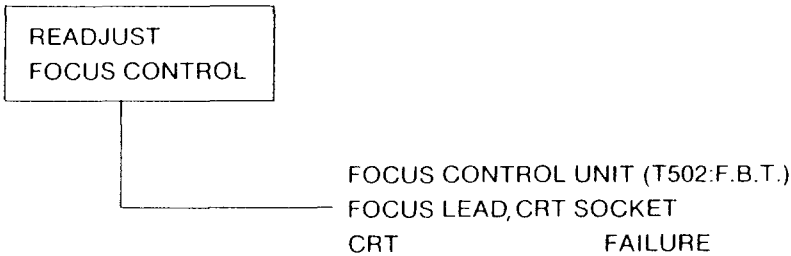
9.2. VERTICAL



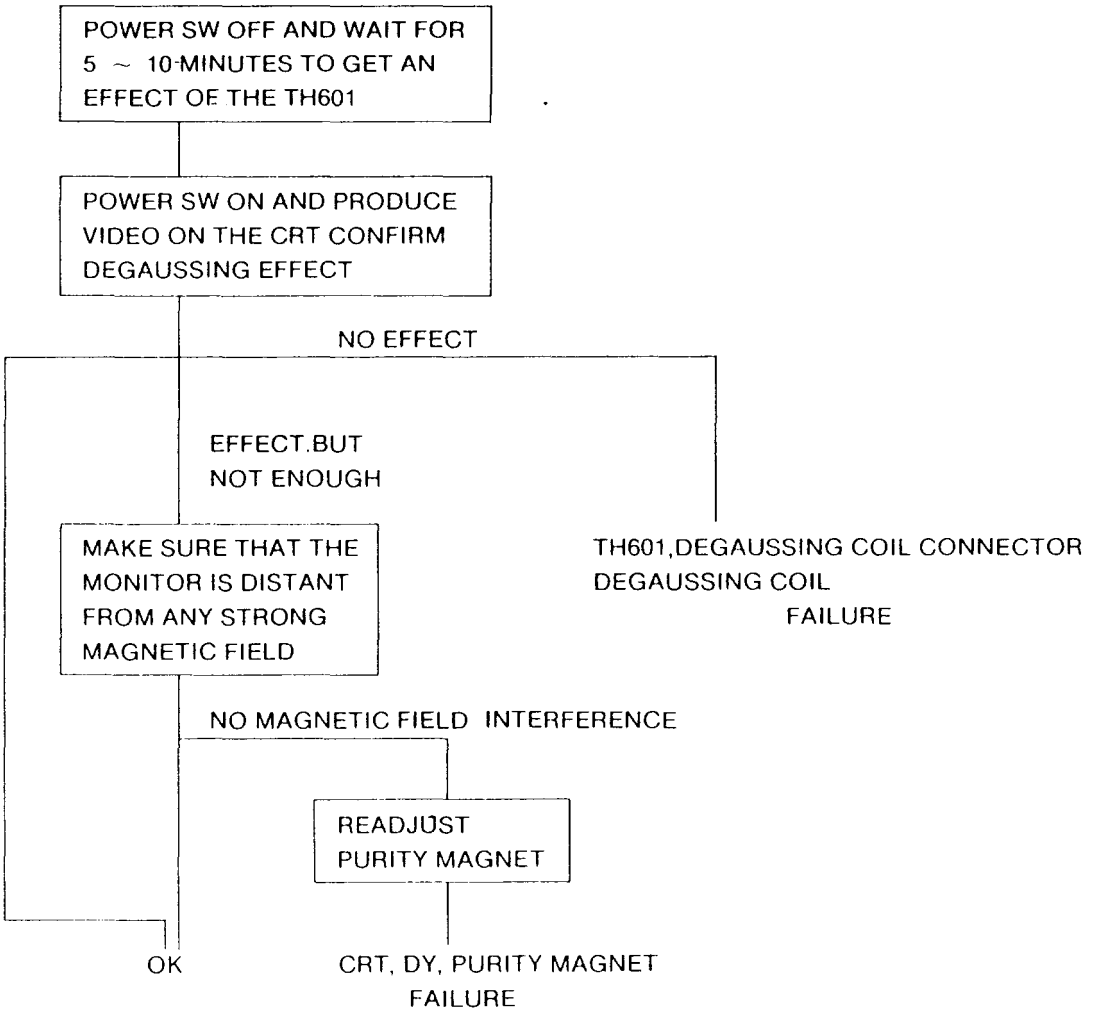
10. SIDE PINCUSHION DISTORTION FAILURE



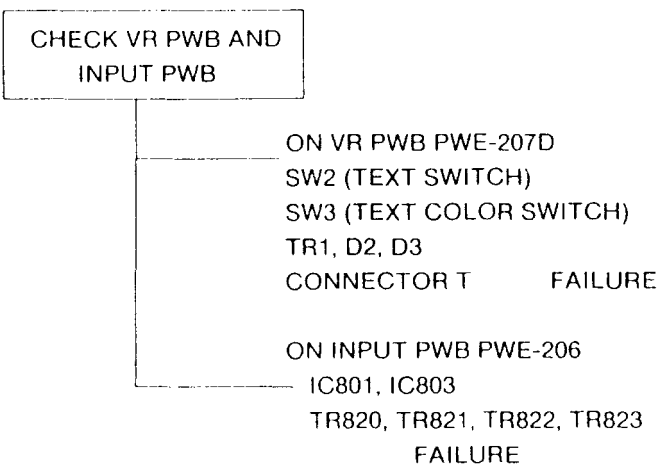
11. POOR FOCUS



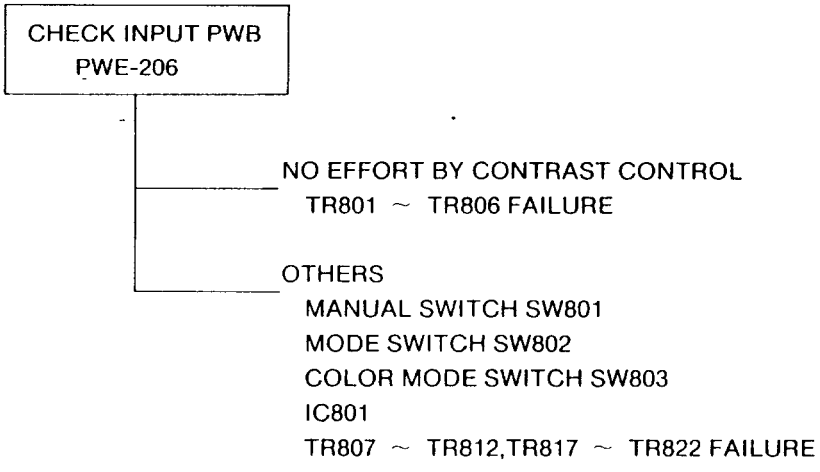
12. IMPURITY ON CRT SCREEN



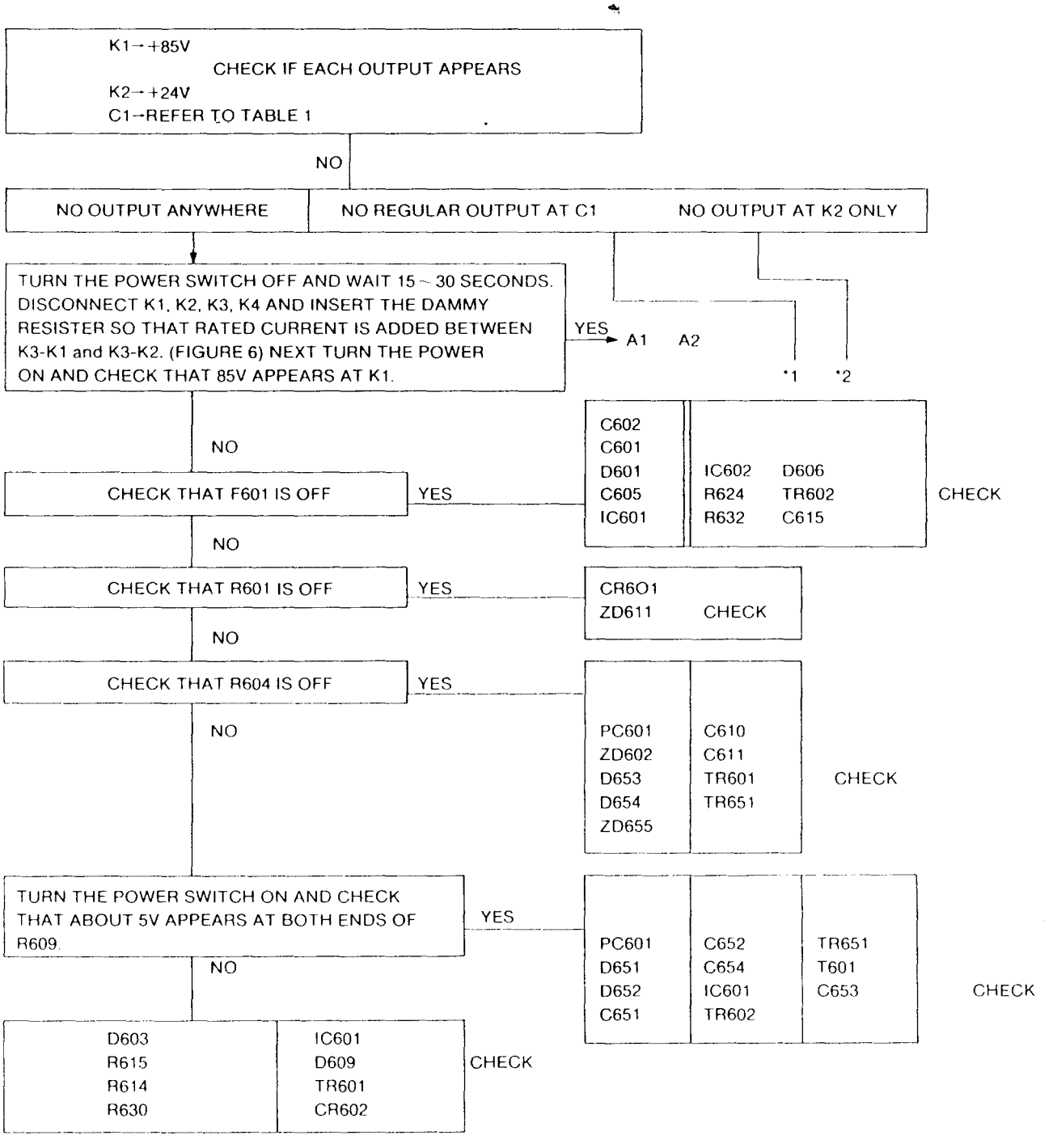
13. ABNORMAL TEXT MODE OPERATION

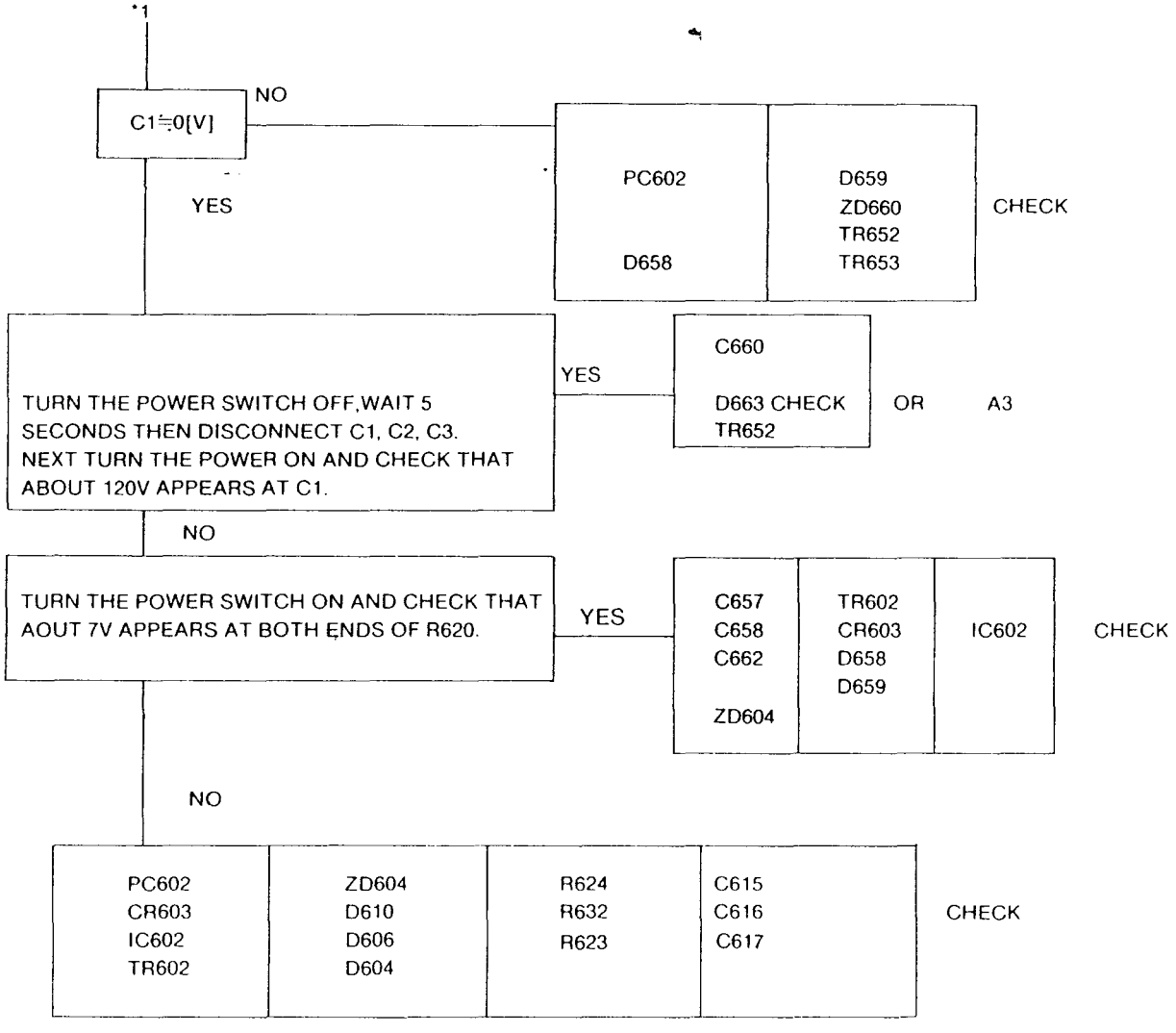


14. ABNORMAL COLOR AT TTL MODE



15. SWITCHING REGULATOR UNIT




*1
C1≒0[V]
NO
YES
PC602
D658
D659
ZD660
TR652
TR653
CHECK
TURN THE POWER SWITCH OFF,WAIT 5 SECONDS THEN DISCONNECT C1, C2, C3. NEXT TURN THE POWER ON AND CHECK THAT ABOUT 120V APPEARS AT C1.
YES
C660
D663 CHECK
TR652
OR
A3
NO
TURN THE POWER SWITCH ON AND CHECK THAT AOUT 7V APPEARS AT BOTH ENDS OF R620.
YES
C657
C658
C662
ZD604
TR602
CR603
D658
D659
IC602
CHECK
NO
PC602
CR603
IC602
TR602
ZD604
D610
D606
D604
R624
R632
R623
C615
C616
C617
CHECK

*2

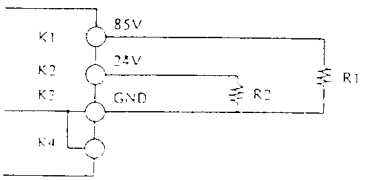
L652	
D652	OPEN
T601 ⑨ PIN	
ETC.	

TABLE 1. C1 OUTPUT VOLTAGE

HORIZONTAL FREQUENCY [kHz]	C1 VOLTAGE [V]
15.85 (CGA)	53
22 (EGA)	65
30.48 (PGC)	94
31.5 (VGA)	98

WITH NO INPUT SIGNAL, ABOUT 45V SHOULD APPEARS AT C1.

FIGURE 6. RATED LOAD CURRENT AT K1 AND K2 TERMINAL



+85V	0.015 ~ 0.18A R1 (5.67KΩ ~ 472Ω)
+24V	0.4 ~ 1.0A R2(60Ω ~ 24Ω)

ATTENTION) DO NOT POWER ON SW.REG. UNIT ITSELF WITHOUT THE LOAD AT K1,K2,
OR IT MAY MISOPERATE PROTECTOR.

MAIN VOLTAGE LINE FAILURE EXCEPT SW.REG.UNIT

VOLTAGE LINE		FAILURE PARTS	PWB ASSY	REMARKS
85V CONNECTOR K1 ~ K3		D554,D555 TR553, TR554	DEF PWB PWE-194	
		C708 ~ C709 TR707 ~ TR712	VIDEO PWB PWE-207A	
24V K2 ~ k3 AND ASSOCI- ATED VOLTAGE LINE	24V CONNECTOR K2 ~ K3	C413, C5C3 IC402,IC502	DEF PWB PWE-194	
	16V POINT TP5E1	R5E1,C5E1,ZD5E1 TR5E1,TR5E2 IC451 ~ IC454,IC456 IC551 ~ IC557, IC559	DEF PWB PWE-194	
	12V CONNECTOR P1 ~ P4	C5C5, C5C6, C5C7 R5C9, IC502	DEF PWB PWE-194	
	6V CONNECTOR HC2 ~ HC1	C5C1 ~ C5C3 CR5C1, ZD5C1, TR5C2 IC501	DEF PWB PWE-194	
45 ~ 120V CONNECTOR C1 ~ C3		C516,C514A,C514B,C515,C575 D501, TR502, T502(F.B.T) DEFLECTION YOKE	DEF PWB PWE-194	
HIGH VOLTAGE FEEDBACK VOLTAGE CONNECTOR C2 ~ C3		R2001,D2001,C2001	DEF PWB PWE-194	

REPLACEMENT PARTS LIST

Note: The components identified by △ mark are critical for safety. Replace only with parts Number specified.

All components are common for models: JC-1402HME/EE/N/R except for the parts indentified by model name in symbol part.

SYMBOL			PARTS NO.	DESCRIPTION	QTY
			*** CRT & TUNER ***		
△CRT(JC-1402HME/EE/N)			33014137	CRT M34JUP23XX158	1
△CRT(JC-1402HMR)			33014140	CRT M34JUP23XX158 (R)	1
			*** ICS ***		
IC453	IC454	IC554	37011094	IC UPC339C (COMP)	3
IC456	IC557	IC559	37051034	MOS UPD4066BC (ESD)	3
IC55C			37051064	IC SN74LS247AN (FLEF)	1
IC851	IC852		37051179	IC SN74LS123N (MONO MLT)	2
IC8C3	IC8C4	IC8C5	37052011	IC SN74LS136N (EX-OR)	4
IC853					
IC451	IC551		37056178	IC UPC1555C	2
IC452	IC552	IC553	37056207	IC UPC25E	3
IC555	IC556		37056217	MOS TC4539BP	2
IC5C1			37056219	IC STR2CC9	1
IC5C2			37056220	IC STR2C12	1
IC8C2			37056245	IC M51387P	1
△IC6C2			37056250	IC STK-74C4H-10S	1
△IC6C1			37056353	IC STK7406H	1
△IC4C1			37056409	IC HA114230P-1E	1
IC8C1			37056421	MOS PC25C-4C	1
IC4C2			37056427	IC UPC1499H	1
			*** TRANSISTORS ***		
TR5E2			35CD7217	TR,2SC945-T G	1
TR4C3	TR4C8		35CE3213	TR,2SC2CC2-T L	2
△TR2CC2	TR4C1	TR4C5	35CE6513	TR 2SC1740-T P	24
TR4C7	TR4C9	TR459			
TR45C	TR462	TR5E2			
TR5C3	TR552	TR715			
TR718	TR81C	TR811			
TR812	TR851	TR352			
TR857	TR859	TR86C			
TR863	TR9C4	TR9C8			
TR9C5	TR9C6	TR9C7	35CH4417	TR,2SC1473-TA G	2
TR558	TR7C4	TR7C5	35CH5C17	TR,2SC3811-TA G	14
TR7C6	TR8C4	TR8C5			
TR8C6	TR8C7	TR8C8			
TR8C9	TR825	TR853			
TR854	TR858				
TR4C4			35CK4412	TR,2SA952 L	1
△TR2CC1	TR4C2	TR4C6	35CK4519	TR 2SA933-T P	12
TR41C	TR461	TR713			

SYMBOL			PARTS NO.	DESCRIPTION	QTY
TR714	TR716	TR717			
TR8C1	TR8C2	TR8C3			
TR9C1	TR9C2	TR9C3	35CK5217	TR,2SA1C16-TA G	3
TR71C	TR711	TR712	35CK8E04	TR,2SA193E-RA D	3
△TP6C1	△TR6C2		35C47216	TR,2SC945 P	2
△TR651	△TR652	△TR653	35C53C11	TR,2SC1941 K	3
TR5C1			35C56311	TR,2SC2688 K	1
TR5E1			35C65414	TR,2SD882 P	1
TR5C2	TR813		35C65912	TR,2SD471 L	2
△TR5C2			35CF24C1	TR 2SC3486-YE	1
TR7C1	TR7C2	TR7C3	35CF25C5	TR,2SC35C2 E	3
TR7C7	TR7C8	TR7C9	35CE6CC4	TR,2SC3953-RA L	3
TR453	TR454	TR455	351GC5CC	TR,AN1A44M-T	5
TR456	TR457				
TR463	TR464	TR856	351GC5C1	TR,AA1A44M-T	5
TR868	TR869				
TR452	TR465	TR466	351GC531	TR,AA1L4M-T	7
TR467	TR557	TR861			
TR862					
TR817	TR818	TR819	351GC6CC	TR,DTA114ES-T	6
TR821	TR822	TR826			
TR1	TR451	TR719	351GC6C1	TR,DTC114ES-T	13
TR823	TR824	TR827			
TR828	TR829	TR855			
TR864	TR865	TR866			
TR867					
TR814	TR815	TR816	351GC613	TR,DTC123YS-T	3
△TR553	△TR554		351221CC	TR 2SK7C3	2
△TR555			351222CC	TR 2SK854	1
CR5C1	△CR6C2	△CR6C3	35595C1C	THYRISTOR C3F4M-L	3
△CR6C1			35595C15	TRIAC AC1CFGM	1
			*** DIODES ***		
D7C1	D7C2	D7C3	36CK1CC9	DIODE,SI.1S2473	9
D7C4	D7C5	D7C6			
D7C7	D7C8	D7C9			
△D6C9	△D61C	△D653	36CK1C1C	DIODE,SI.1S2472	1C
△D654	△D658	△D659			
△D661	△D662	△D663			
D713					
D2	D3	D4C2	36CK1C27	DIODE 1SS132	44
D4C3	D4C4	D4C5			
D4C6	D4C7	D451			
D452	D453	D454			
D5C3	D551	D552			
D553	D710	D711			
D712	D8C1	D8C2			
D8C3	D8C4	D8C5			

SYMBOL			PARTS NO	DESCRIPTION	QTY
D8C6	D8C7	D8C8			
D8C9	D810	D811			
D812	D813	D814			
D815	D816	D817	360K1C27	DIODE 1SS132	44
D818	D819	D820			
D821	D822	D823			
D824	D850				
△D6C7	△D6C8	D9C1	360K1C32	DIODE 1SS82-TA	5
D9C2	D9C3				
ZD4C2	ZD85C	ZD851	360K3100	DIODE RD5.1EB (2)-T4	3
ZD5C1			360K3121	DIODE RD6.8EB(3)-T4	1
ZD4C4			360K3123	DIODE RD2CEB(3)	1
ZD7C1			360K3124	DIODE RD6.2EB (3)-T4	1
△ZD6C4			360K3129	DIODE,RD27EB(4)-T4	1
△ZD6C5			360K3137	DIODE,RD7.5EB(2)-T4	1
△ZD2C01	△ZD2C02		360K3143	DIODE,RD6.2JSB(1)-T4	2
△ZD6C2			360K3149	DIODE RD1CEB(2)-T4	1
△ZD655	△ZD66C		360K3151	DIODE RD6.8EB(2)-T4	2
ZD5C2			360K3160	DIODE RD8.2EB(2)-T4	1
△ZD611			360K3162	DIODE,RD2.7EB(1)-T4	1
ZD5C3			360K3189	DIODE RD3.9EB(2)-T4	1
ZD5C1			360K3400	DIODE RD12JSB-T4	1
ZD4C1			360K3401	DIODE RD2CJSB-T4	1
ZD8C2			360K3635	DIODE RD5.1ESB(2)-T4	1
ZD8C1			360K3660	DIODE RD9.1ESB(3)-T4	1
ZD5E1			36003170	RECTIFIER,SI.RD6.2JSB(2)	1
△D2C01	△D2C04	D4C1	361K7160	RECTIFIER,SI. TVR-C6G G23	8
D5C1	D5C2	D5C3			
△D554	△D555				
D5C2			361K7505	RECTIFIER,SI.ERB44-06V1	1
△D6C3	△D6C6		36107174	RECTIFIER,SI. RU1P	2
△D651			36107305	DIODE RL2B	1
△D5C1			36107509	DIODE RM4F	1
△D652			36107511	RECTIFIER,SI. RL4Z,LFK2	1
△D657			36107512	RECTIFIER,SI. RG4C,LFK2	1
FD8C2			36108042	DIODE ARRAY 1S2473X9A	1
FD8C1			36108093	DIODE 1S2473X9K	1
△D6C1			36108201	DIODE,NETWORK DSSBA6CS	1
D1			36801023	DIODE,LIGHT-E SEL1322G	1
△D2C02	△D2C05		38005011	VARISTER,V01220	2
△TH6C1			38112031	THERMISTOR,POSITIVE	1
△PC6C1	△PC6C2		39200237	IC TLP634(NHE-LF2)	2

*** TRANSFORMERS ***

T5C1	45803CCF	TRANS,H.DRIVE	1
T5C3	46305101	TRANS,CONVERTER	1
△T6C1	46302407	TRANS,SWITCHING	1
△T6C2	46303408	TRANS,SWITCHING	1
△T5C2	47105637	F.B.T(JC-1402HME/EE/R/N)	1
△T502	47105640	F.B.T.(JC-1402HMED)	1
△T4C1	47502C42	TRANS,SIDE PINCUSHION	1

*** VARIABLE RESISTORS ***

VR4			41011270	R,VARIABLE B5C0-V(M)	1
VR3			41011273	R,VARIABLE B2CK-V(M)	1
VR5			41011275	R,VARIABLE B2CK-V(M)	1
VR1	VR2		41023603	R,VARIABLE B1CK-V	2
VR4C3			41041009	R,VARIABLE B47K	1
VR4C2			41067003	R,VARIABLE 3CCH G.1W	1
VR5E1			41067005	R,VARIABLE 1K G.1W	1
VR4C1	VR5C1		41067008	R,VARIABLE 5K	2
VR8C1	VR8C2	VR8C3	41071161	R,VARIABLE B4.7K	3
VR7C1			41071210	R,VARIABLE B3.3K	1
VR4C5			41085004	R,VARIABLE B5CCH	1
VR5C1			41085008	R,VARIABLE B5K	1
VR551			41085009	R,VARIABLE B1CK	1
VR451	VR552	VR553	41085010	R,VARIABLE B2CK	5
VR554	VR555				
VR9C1	VR9C2	VR9C3	41085013	R,VARIABLE B1C0K	6
VR9C4	VR9C5	VR9C6			
VR5C2			41085014	R,VARIABLE B2C0K	1
△VR651			41087058	R,VARIABLE B5K	1
△VR2C01	△VR2C02	△VR652	41505005	R,VARIABLE B2K	3
△VR2C03	△VR653		41505008	R,VARIABLE B1CK	2

*** RELAYS & SWITCHES ***

SW3			65161021	SWITCH,SLIDE	1
SW8C3			65161029	SWITCH,SLIDE	1
SW1	SW2		65161034	SWITCH,SLIDE	2
SW8C1	SW8C2		65161035	SWITCH,SLIDE	2
△SW1			65360006	SWITCH,PUSH BUTTON	1
△RL1			65602501	RELAY G6B-1114P	1
RL8C2			65602551	RELAY	1
RL8C1	RL8C3		65699012	RELAY RY12CW (2T)	2

*** COILS & FILTERS ***

LC7C2	39099C15	FILTER ZJSC-2R2-101	1
L505	60908043	COIL,VARIABLE WIDTH	1
△L5C3	60908047	COIL,WIDTH	1
△L506	60918101	COIL,H.LIN	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
△L5C7	6C999C04	COIL,CHOKE	1
L7C1 L7C2 L7C3 L9C1 L9C2 L9C3	610E1711	COIL,FILTER 3.3UH	6
L7C4 L7C5 L7C6	610E1712	COIL,FILTER 3.9UH	3
L8C1 L8C2	610E1714	COIL,FILTER 5.6UH	2
L5C2	610F7C10	COIL,FILTER 2.7UH	1
L5C2	61022C82	FILTER CHOKE	1
△L6C1	61062C54	LINE FILTER	1
L5C1 L5C1	61064CC6	COIL,FILTER 50UH	2
△L6C2 △L651 △L653	61C99C11	COIL,CHOKE 33UH	3
△L652	61C99C14	COIL 33CK1.8	1
L5C2 L5C5	61C99C19	COIL,CHOKE	2
△DEG	61314210	COIL,DEGAUSSING	1
LC7C1	61606C21	NOISE FILTER DSS-271Y	1
LC8C1	61606C23	FILTER DSS-223S	1

*** PWB ASSYS ***

	84K1CCC4	INPUT PWB ASSY	1
	84K1CDC4	DEF PWB ASSY	1
	84K1CJ01	CRT PWB ASSY	1
	84K1CK03	INTERFACE PWB ASSY	1
	84K11AC2	SW.REG.PWB ASSY	1

*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***

	32500C28	ADAPTER (9P-15P)	1
SG9C1 SG9C2 SG9C3	3299C047	ARRESTER	3
△F6C1 △F651	66699CC7	FUSE ET T2A,250V-S,B SOC	2
SG9C5	66706C01	SPARK GAP 1.2KV	1
△	70032026	SG/CRT SOCKET	1
CN1	7C056359	D SUB CONNECTOR 9PL	1
	7C102147	IC SOCKET 24P	1
△	70800322	LINE CORD(JC-1402HMEE)	1
△	7C800031	LINE CORD (JC-1402HME/N)	1
△	73513006	LINE CORD SAA L2.0(JC1402HMR)	1
	71205C37	HOLDER,FUSE	4
CN-RH CN-RH1 CN-RH2 CN-RH3	73721C03	CONNECTOR PIN 2P	5
	73893C29	CABLE 9P-9P	1

*** APPEARANCE PARTS ***

	24514792	COIL SPRING	1

SYMBOL	PARTS NO	DESCRIPTION	QTY
	25307951	CABINET FRONT ASSY	1
	25307972	CABINET BACK	1
	25402441	REVOLVING STAND T	1
	25405971	REVOLVING STAND(B) ASSY	1
	25407381	CONTROL LID ASSY	1
(JC-1402HME)	25765502	NAME PLATE,INSTRUCTION	1
(JC-1402HMR)	25765681	NAME PLATE, INSTRUCTION	1
(JC-1402HMEE)	25766011	NAME PLATE, INSTRUCTION	1
(JC-1402HMN)	25766591	NAME PLATE, INSTRUCTION	1

*** KNOBS & PUSH BUTTONS ***

	25451881	KNOB,CONTROL	2
	25452301	PUSH BUTTON	1

*** PRINTED & PACKING MATERIALS ***

(JC-1402HMEE)	24813501	BAG ,POLYETHYLENE	1
(JC-1402HME/R/N)	24806961	BAG,POLYETHYLENE(270*370)	1
(JC-1402HME/R/N)	24813191	BAG,POLYETHYLENE(150*370)	1
	25280161	GUIDE RAIL	1
	25601551	CUSHION SHEET	4
	25603511	BARRIER (SW.REG.PWB)	1
(JC-1402HMEE)	25815061	BAG, POLYETHYLENE(270*370)	1
	25605021	CUSHION SHEET	2
(JC-1402HME/R/N)	25804991	BAG,POLYETHYLENE	1
	25813912	FILLER(L),CARTON	1
	25813922	FILLER(R),CARTON	1
(JC-1402HME)	25813932	CARTON BOX	1
(JC-1402HMR)	25814182	CARTON BOX	1
(JC-1402HMEE)	25814451	CARTON BOX	1
(JC-1402HMN)	25814971	CARTON BOX	1
(JC-1402HMR)	78043392	WARRANTY CARD	1
	78034401	MONITOR SALES OFFICE LIST	1
	78120214	INSTRUCTION BOOK	1
	599910266	SERVICE MANUAL	1
	599910271	CIRCUIT DESCRIPTION	1

*** RESISTORS ***

R5B1	4C1C6637	R,CARBON 33H 5% 1/4W	1
R503	4C1C6667	R,CARBON 560H 5% 1/4W	1
R501 △R6C2 △R6C8 △R611 △R619 △R663	4C1C6673	R,CARBON 1.0K 5% 1/4W	6
△R6C9 △R620	4C1C6675	R,CARBON 1.2K 5% 1/4W	2
△R662	4C1C6679	R,CARBON 1.8K 5% 1/4W	1
R5E2	4C1C6681	R,CARBON 2.2K 5% 1/4W	1
R527 △R631	4C1C6683	R,CARBON 2.7K 5% 1/4W	2

SYMBOL			PARTS NO	DESCRIPTION	QTY
R5A2	R598	R599	401C6685	R,CARBON 3.3K 5% 1/4W	6
△R628	△R633	△R656			
R49C	△R636	△R655	401C6691	R,CARBON 5.6K 5% 1/4W	4
△R666					
R585			401C6697	R,CARBON 6.8K 5% 1/4W	1
R467			401C67C1	R,CARBON 15K 5% 1/4W	1
R448			401C67C3	R,CARBON 18K 5% 1/4W	1
△R664			401C67C5	R,CARBON 22K 5% 1/4W	1
△R627			401C67C7	R,CARBON 27K 5% 1/4W	1
R482	R488		401C6721	R,CARBON 100K 5% 1/4W	2
△R657			401C6723	R,CARBON 120K 5% 1/4W	1
R473			401C6757	R,CARBON 3.3M 5% 1/4W	1
R478	R5A6	R574	401C6761	R,CARBON 4.7M 5% 1/4W	5
R578	R582				
R51C			401H5627	R,CARBON 8.2H 5% 1/2W	1
R451			401H5646	R,CARBON 75H 5% 1/2W	1
R9C4	R9C5	R9C6	401H5649	R,CARBON 100H 5% 1/2W	3
R7C4E	R7C4G	R7C4R	401H5651	R,CARBON 120H 5% 1/2W	3
R823			401H5655	R,CARBON 180H 5% 1/2W	1
R828			401H5661	R,CARBON 330H 5% 1/2W	1
R45C			401H5663	R,CARBON 390H 5% 1/2W	1
R526			401H5669	R,CARBON 680H 5% 1/2W	1
R4A1	R4B4		401H5673	R,CARBON 1.0K 5% 1/2W	2
R5B2	R5B3		401H5683	R,CARBON 2.7K 5% 1/2W	2
R5C9	R936		401H5689	R,CARBON 4.7K 5% 1/2W	2
△R6C5	△R6C6		401H5735	R,CARBON 390K 5% 1/2W	2
△R6C3			401H5747	R,CARBON 820K 5% 1/2W	1
△R618			401H5753	R,CARBON 2.2M 5% 1/2W	1
R71C	R815		401K5625	R,CARBON 10H 5% 1/6W	2
R7C2E	R7C2G	R7C2R	401K5647	R,CARBON 82H 5% 1/6W	6
R7C5E	R7C5G	R7C5R			
R413	R5C3		401K5649	R,CARBON 100H 5% 1/6W	2
R414			401K5651	R,CARBON 120H 5% 1/6W	1
R724	R853		401K5657	R,CARBON 220H 5% 1/6W	2
R8C7G			401K5659	R,CARBON 270H 5% 1/6W	1
R935			401K5661	R,CARBON 330H 5% 1/6W	1
R5C8	R817E	R817G	401K5665	R,CARBON 470H 5% 1/6W	4
R817R					
R417H	R496	R567	401K5667	R,CARBON 560H 5% 1/6W	6
R7C1E	R7C1G	R7C1R			
R712	R8C7E		401K5669	R,CARBON 680H 5% 1/6W	2
R4A8	R4B3	R423	401K5673	R,CARBON 1.0K 5% 1/6W	20
R5C2	R5C7	R534			
R536	R720	R721			
R722	R832	R833			
R834	R835	R836			
R837	R9C1	R9C2			

SYMBOL			PARTS NO	DESCRIPTION	QTY
R9C3	R934				
R827			401K5675	R,CARBON 1.2K 5% 1/6W	1
R495	R516	R711	401K5677	R,CARBON 1.5K 5% 1/6W	11
R8C1E	R8C1G	R8C1R			
R8C2E	R8C2G	R8C2R			
R895	R896				
△R2CC2	R447		401K5679	R,CARBON 1.8K 5% 1/6W	2
R2	R4A7	R436	401K5681	R,CARBON 2.2K 5% 1/6W	25
R456	R457	R458			
R5E3	R529	R814			
R852	R854	R857			
R858	R860	R861			
R867	R873	R874			
R884	R885	R886			
R888	R890	R893			
R931					
△R2CC3	R411	R718	401K5683	R,CARBON 2.7K 5% 1/6W	6
R723	R863	R881			
△R2CC5	△R2CC9	R437	401K5685	R,CARBON 3.3K 5% 1/6W	12
R494	R584	R812E			
R812G	R812R	R856	401K5685	R,CARBON 3.3K 5% 1/6W	12
R87C	R922	R93C			
R439	R522	R533	401K5687	R,CARBON 3.9K 5% 1/6W	4
R557					
R4C3	R415	R424	401K5689	R,CARBON 4.7K 5% 1/6W	8
R551	R8C8E	R8C8G			
R8C8R	R879				
R1	R5BC	R5E5	401K5691	R,CARBON 5.6K 5% 1/6W	10
R5C2	R826	R865			
R866	R872	R883			
R929					
R4C2	R484	R515	401K5693	R,CARBON 6.8K 5% 1/6W	7
R7C3E	R7C3G	R7C3R			
R825					
△R2CC4	△R2CC8	R4C1	401K5695	R,CARBON 8.2K 5% 1/6W	12
R5C6	R5C6	R552			
R7C9	R715	R719			
R868	R869	R875			
△R2CC6	△R2C1C	R488	401K5697	R,CARBON 10K 5% 1/6W	23
R412	R452	R453			
R455	R5C4	R553			
R555	R556	R563			
R595	R725	R813			
R816	R838	R851			
R862	R871	R891			
R897	R92C				
△R2C11	R4C0	R449	401K5699	R,CARBON 12K 5% 1/6W	11
R514	R587	R713			
R714	R864	R877			
R882	R921				
R4E1	R4E2	R4E6	401K57C1	R,CARBON 15K 5% 1/6W	18